

Draft Environmental Assessment

Heart of Texas Council of Governments

(Prepared by Archer, Inc.)

Reagan Tower Site

Falls County, Texas

Homeland Security Grant Program (HSGP)

Project/Grant# 2009-SS-T9-0064 (9058)

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FEMA

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1.0 Introduction

1.1 Project Description

The Heart of Texas Council of Governments (HOTCOG) proposes to construct a 195-foot tall (top of structure) self-support telecommunications tower (the Proposed Action) at 191 County Road 2902, Reagan, Falls County, Texas (Latitude 31.220833, Longitude -96.783444). HOTCOG has been awarded funding under the Homeland Security Grant Program (at a 50% level) and the Law Enforcement and Terrorism Prevention Account (also at a 50% level) to fund the Proposed Action. The funding grant number is 2009-SS-T9-0065 (9058). These programs provide funding to public safety agencies to construct and implement equipment and programs that will increase and protect critical communications infrastructure in the event of a natural disaster, terrorism event, as well as during routine operations.

1.2 NEPA Requirements

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Acts (NEPA) of 1969, the President's Council on Environmental Quality regulations to implement NEPA (40 Code of Federal Regulations Parts 1500-1508), and the Federal Emergency Management Agency (FEMA) regulations implementing NEPA (44 CFR Part 10). FEMA is required to consider potential environmental impacts before funding or approving actions and projects. The purpose of this EA is to analyze the potential environmental impacts of the Proposed Action. FEMA will use the findings in this EA to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

2.0 Purpose And Need

2.1 Purpose

HOTCOG's objective is to have complete communication coverage throughout Falls County, Texas. This would involve managing routine daily radio traffic as well as emergency incident radio traffic for Falls County.

2.2 Need

Falls County, Texas needs to provide radio communications coverage for public safety agency communication in areas that currently lack coverage or lack adequate coverage.

3.0 Alternatives

3.1 No Action Alternative

Under the No Action Alternative, no telecommunications tower would be constructed. This alternative would jeopardize public safety by allowing the continuation of the existing, inadequate level of radio communications for public safety agencies.

3.2 Proposed Action

The Proposed Action will consist of the construction of a 195-foot total height self-support telecommunications tower which will be equipped with a candelabra antenna mount at the approximate 180-foot level. The tower will be engineered to accommodate future, possible cell phone platform mounts at the 160-foot level and the 120-foot level. Additional actions will include the following:

- Placement of a pre-fabricated equipment shelter.
- Installation of electronic telecommunications equipment with the equipment shelter.
- Installation of cabling leading from the equipment shelter to the radio antennas.
- Installation of two way radio antennas mounted on the candelabra mount at the approximate 180-foot level.
- Future possible installation of cellular telephone antenna platforms at the 160-foot and 120-foot levels.
- Placement of a liquefied petroleum gas-powered emergency electrical generator and associated above-ground storage tank outside of the equipment shelter.
- Placement of emergency power backup lead/acid batteries within the equipment shelter.

Upon completion of construction, the facility will be managed and owned by Falls County, Texas.

The Proposed Action area is a vacant lot located in low-density neighborhood of single-family homes in Reagan, Texas (Latitude 31.220833, Longitude -96.783444).

Photographs of the Proposed Action area are included in Exhibit 1. A vicinity map and site plan of the Proposed Action area is included in Exhibit 2.

3.3 Alternatives Considered And Dismissed

Alternative actions that were considered included colocation on existing telecommunications towers and colocations on existing buildings or other non-telecommunications structures such as elevated water tanks, freeway overpasses, and electrical transmission line support structures. These alternatives proved not to be feasible because of the following considerations:

- With regard to colocation on existing telecommunications towers, either no towers of sufficient height were located within a target radius that would afford adequate coverage or the tower operators were unwilling to agree to long-term colocation leases.
- With regard to colocation on existing non-tower structures, no structures of adequate height were identified that would enable adequate coverage.

These dismissed alternatives will not be discussed any further in this EA.

4.0 Affected Environment And Potential Impacts

4.1 Physical Resources

4.1.1 Geology, Soils, And Seismicity

Under the No Action alternative, there would be no short or long-term impacts to soils, geologic resources, or seismic features.

The Proposed Action area is a vacant lot located in a low density neighborhood of single-family homes in Reagan, Texas.

According to the United States Department of Agriculture, National Resources Conservation Service, the dominant soil type in the area of the Proposed Action consists of "Crockett," characterized at the soil surface as a fine sandy loam. In the area of the Proposed Action, the native soil profile consists of a fine sandy loam from zero to nine inches, clay from nine to 34 inches, sandy clay loam from 34 to 53 inches, and depth of more than 80 inches to any restrictive feature. The parent material for the soil group is listed as Residuum weathered from shale of the Tertiary Age.

The Farmland Protection Policy Act (FPPA) (p.l. 97-98, Sec. 1539-1549; 7 U.S.C. 4201, et seq.) is intended to minimize the impact Federal programs have on unnecessary and irreversible conversion of farmland to nonagricultural uses. FPPA assures that Federal programs are administered to be compatible with various programs to protect farmland. For the purpose of FPPA, farmland definition includes prime farmland, unique farmland, and land of statewide or local importance; it is important to note that these definitions include land such as forestland, pastureland, or other land that is not in current production. The proposed project site is not considered prime farmland by the United States Department of Agriculture, National Resources Conservation Service.

The elevation of the Proposed Action site is approximately 379 feet above mean sea level. The topography of the Proposed Action area is characterized as natural slopes ranging from approximately one to three percent. There are no published indications of faults in the vicinity of the site. Archer identified no groundwater during site investigations. The vegetation at the Proposed Action site consists of sparse patchy grasses.

Ground disturbance would be confined to the boring of the tower footings, electrical lines, equipment shelter foundation, and fencing. The proposed tower footings will be of concrete, and will be approximately three to four feet in diameter, and thirty to forty feet in depth. Falls County will limit the area of soil disturbance to the project area and require the use of temporary fencing to control erosion during construction. Any hazardous materials encountered or generated on site will be disposed of off-site according to current Federal and state regulations.

Therefore, the Proposed Action will not impact geologic resources and will not have significant impacts to soils.

A copy of the Soil Survey is included in Exhibit 3; a topographic map is included in Exhibit 4.

4.1.2 Air Quality

Under the No Action alternative, there would be no short- or long-term impacts to air quality.

Air quality is regulated by the Clean Air Act (CAA) of 1970 (42 U.S.C. § 7401 *et seq.*) Air quality is further regulated through primary and secondary National Ambient Air Quality Standards (NAAQS) under the CAA. Air quality controls regions (AQCR) are classified by the US Environmental Protection Agency (EPA) based on whether the region meets or exceeds Federal primary or secondary NAAQS. There are seven criteria air pollutants classified by the EPA: carbon monoxide, lead, nitrogen dioxide, coarse particulates, fine particulates, ozone, and sulfur dioxide. An AQCR, or portion thereof, may be classified as being in attainment, non-attainment, or it can be unclassified for any one of the criteria pollutants.

The Proposed Action site is located in Falls County. Falls County is not listed as a non-attainment area county.

The use of heavy equipment and construction activities at the Proposed Action area may result in short term and de minimis impacts on air quality at or near the Proposed Action area. De minimis condition generally does not present a threat to human health or the environmental and generally would not be subject to a regulatory enforcement action. Construction-related air quality impacts may include dust from excavation activities and emissions from construction equipment and vehicles. The impacts will be limited to construction operation hours for the construction period and will not likely increase air pollutants. No fixed-source air emissions will be generated except in instances where there is a localized power outage, in which case a liquefied petroleum gas-powered emergency electrical generator will be temporarily activated. Based on the limited area of disturbance for the Proposed Action and the limited construction timeline, the Proposed Action will have no significant impact to air quality resulting from construction activities or the occasional, temporary activation of an emergency electrical power generator.

Once operational, the Proposed Action facility will be powered by electricity. The routine daily operation of the Proposed Action will not result in any emissions or dust generation. No fixed-source air emissions will be generated except in instances where there is a localized power outage, in which case a liquefied petroleum gas-powered emergency electrical generator will be temporarily activated. Based on the limited potential for emissions and the lack of dust generation involved in the daily operations of the Proposed Action, there will be no impacts to air quality resulting from the long term operation of the Proposed Action.

4.1.3 Climate Change

Under the No Action alternative, there would be no short- or long-term impacts to climate change.

The Proposed Action area is a vacant lot located in a low density neighborhood of single-family homes in Reagan, Texas.

The Proposed Action will not involve the clearing of woodland. Construction activities at the Proposed Action area may result in a temporary increase in vehicle traffic only during the Proposed Action construction. The increase in vehicle traffic may temporarily increase vehicle emissions in the Proposed Action area. Once operational, the Proposed Action area will be powered by electricity. No air emissions will be generated except in instances where there is a localized power outage, in which case a liquefied petroleum gas-powered emergency electrical generator will be temporarily activated. Based on the limited size of the Proposed Action area, the temporary nature of the construction activities, and the limited potential for emissions at the Proposed Action area, the Proposed Action would have no significant impact to climate change.

4.2 Water Resources

4.2.1 Water Quality

Under the No Action alternative, there would be no short- or long-term impacts to water resources.

The Clean Water Act (CWA) established the National Pollutant Discharge Elimination System (NPDES) in order to regulate wastewater discharges from point sources into water resources. Construction sites resulting in greater than one acre of disturbance are required under the NPDES to obtain EPA and/or state permits. The Texas Commission on Environmental Quality is the state agency that has assumed NPDES permitting for the State of Texas. Activities at the Proposed Action area will be below the one acre land disturbance limitation for NPDES permitting.

The Proposed Action area is a vacant lot located in a residential neighborhood of single-family homes in Reagan, Texas. Falls County will limit the area of soil disturbance to the project area and require the use of temporary fencing to control erosion during construction. No bodies of water are located on the Proposed Action area. Any hazardous substances encountered or used during construction activities for the Proposed Action will be disposed of off-site at an appropriate facility. Based on the lack of water bodies and the proposed proper disposal of hazardous materials off-site with regard to the Proposed Action area, the Proposed Action would have no significant impacts on water quality.

4.2.2 Wetlands

Under the No Action alternative, there would be no short- or long-term impacts to wetlands.

The Proposed Action area is a vacant lot located in a low density neighborhood of single-family homes in Reagan, Texas.

Executive Order 11990 of the CWA (40CFR 230.3) defines wetlands as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated conditions. Wetlands generally include swamps, marshes, bogs and similar areas.”

Aarcher reviewed National Wetlands Inventory wetlands maps from the United States Fish and Wildlife Services (USFWS) website: <http://www.fws.gov/wetlands/redirect.html>, to determine if the subject property is located within a wetland. In addition, Aarcher reviewed soil data from the U.S. Department of Agriculture website: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx> . The soil type for the Proposed Action area does not meet the characteristics of a hydric soil, a necessary component of a wetland. Based on the map review and soil data, the Proposed Action will have no impacts on wetlands.

A copy of the FWS Wetlands map is included in Exhibit 5.

4.2.3 Floodplains

Under the No Action alternative, there would be no short- or long-term impacts to floodplain areas.

The Proposed Action area is a vacant lot located in a low density neighborhood of single-family homes in Reagan, Texas.

Executive Order 11988, Floodplain Management, requires federal agencies to take action to minimize occupancy and modification of the floodplain. Specifically, Executive Order 11988 prohibits federal agencies from funding construction in the 100-year floodplain (500-year floodplain for critical facilities) unless there are no practicable alternatives. The National Flood Insurance Program (NFIP) floodplain maps are used to identify the regulatory 100-year Floodplain.

The subject property locale has not been mapped for floodplains by FEMA. Review of topographic maps shows that there are no intermittent creeks, creeks, or rivers within 1,000 feet of the subject property. Based on this information, the Proposed Action is not anticipated to affect areas of the 100-year floodplain, and there would be no impact to floodplains.

A copy of the FEMA floodplain search is included in Exhibit 6.

4.3 Coastal Resources

Under the No Action alternative, there would be no short- or long-term impacts to coastal resources.

The Coastal Zone Management Act was established in 1972 to preserve, protect, and (where possible) restore or enhance the resources of the coastal zones of the United States.

The Proposed Action area is a vacant lot located in a residential neighborhood of single-family homes in Reagan, Texas. The Proposed Action is not located within a coastal resource area, nor would it have an impact on a coastal resource area. The Proposed Action does not require a coastal use permit.

4.4 Biological Resources

4.4.1 Threatened And Endangered Species And Critical Habitats

Under the No Action alternative, there would be no short- or long-term impacts to threatened or endangered species or critical habitats.

Federal agencies are directed under Section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1536a2) to utilize their authorities to enforce and carry out programs for the conservation of listed threatened and endangered species or designated critical habitats. Section 7 of the Act also sets out the consultation process, which is further implemented by regulation (50 CFR 402).

The Proposed Action area is a vacant lot located in a residential neighborhood of single-family homes in Reagan, Texas. U.S. Fish and Wildlife Service Threatened and Endangered Species lists for the Proposed Action area county were reviewed at the USFWS website: <http://www.fws.gov/endangered>. The Proposed Action area setting was compared to the profile of characteristic habitat for threatened and endangered species known to exist within the Proposed Action area, county or parish. U.S. Fish and Wildlife Service information was reviewed to determine if the Proposed Action might affect designated critical habitats. State fish and wildlife agencies defer to the U.S. Fish and Wildlife Service for evaluations of the presence of federally-listed threatened and endangered species resources.

The following threatened or endangered species may be found in Falls County, Texas:

- Whooping Crane: habitat includes requirements for wetland areas for nesting and feeding. The Proposed Action area is not located in a wetland area.
- Bald Eagle: although the Bald Eagle appears on the threatened and endangered species list, it has been delisted due to recovery. However, the Bald Eagle is protected by the Bald Eagle and Golden Eagle Protection Act. The Proposed Action area is not located

coastlines, rivers, large lakes or streams that would support an adequate food supply for Bald Eagles.

Based on the comparison of the Proposed Action area setting and the characteristic habitat of the above listed threatened or endangered species, FEMA has determined that the Proposed Action would have no impact on threatened or endangered species, Bald Eagles, or associated critical habitats.

A list of threatened and endangered species or critical habitats found in the Proposed Action area county is included in Exhibit 7.

4.4.2 Wildlife And Fish

Under the No Action alternative, there would be no short- or long-term impacts to wilderness areas or wildlife preserves.

The Proposed Action area is a vacant lot located in a residential neighborhood of single-family homes in Reagan, Texas.

National Atlas on-line cartographic resources were reviewed at <http://nationalatlas.gov/mapmaker> to determine if the Proposed Action area is located in an officially designated wilderness area or wildlife preserve. The National Atlas comprises lands designated as wilderness areas and wildlife preserves by the [Bureau of Land Management](#), the [U.S. Fish and Wildlife Service](#), the [U.S. Department of Agriculture Forest Service](#), or the [National Park Service](#). Based on review of these resources, the Proposed Action will have no impact on wilderness areas of wildlife preserves.

Copies of the National Atlas map search and the USFWS submittal response are included in Exhibit 8.

4.4.3 Migratory Birds

Under the Migratory Bird Treaty Act, taking, killing or possessing migratory birds is unlawful. Migratory birds are a federal trust resource that the USFWS is authorized to protect, and has put forth recommendations for communication tower design and height to mitigate collision-related mortality. Mitigation measures outlined in the USFWS Interim Guidelines For Recommendations On Communications Tower Siting, Construction, Operation and Decommissioning issued by the USFWS will be implemented as practical for this Proposed Action.

Construction of the Proposed Action has been determined to be the best option because co-locating the communications equipment on an existing tower or other structure is not an available option. The Proposed Action will be a self-support tower and will not require guy wires.

According to resource reviews, this Proposed Action location will not be sited in or near wetlands, other known bird concentration areas, in known migratory or daily movement flyways, or in habitat of threatened or endangered species.

Based on the existing environmental conditions and the proposed tower design, the Proposed Action would have no impact migratory birds.

4.5 Cultural Resources

4.5.1 Historic Properties

Under the No Action alternative, there would be no short- or long-term impacts to historic properties.

Federal agencies are required by Section 106 of the National Historic Preservation Act of 1966 (NHPA, 16 U.S.C. §§ 470 et seq.) and “Protection of Historic Properties” (36 CFR Part 800) to evaluate for potential effects of Proposed Actions on Historic properties.

The FCC adopted the Nationwide Programmatic Agreement through order FCC 04-222 regarding the Section 106 National Historic Preservation Act Review Process. The order was signed on October 5, 2004 by the Advisory Council on Historic Preservation (ACHP) and the National Conference of State Historic Preservation Officers and amended Section 1.1307(a) (4) of the Commission's rules, 47 C.F.R. §1.1307(a) (4).

In order for a new antenna support structure to be constructed, the FCC Form 620 New Tower Submission Packet must to be completed by or on behalf of Applicants. Before any construction or other installation activities at the Proposed Action area begin, the Packet (including Form 620 and attachments) is to be submitted to the State Historic Preservation Office (“SHPO”) or to the Tribal Historic Preservation Office (“THPO”), as appropriate. If the Applicant fails to provide the Submission Packet and complete the review process under Section 106 of the NHPA prior to start of construction this may result in violation of NHPA and the Commission’s rules. This process is not as a substitute for the “Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communications Commission,” dated September 2004, and the relevant rules of the FCC (47 C.F.R. §§ 1.1301-1.1319) and the ACHP (36 C.F.R. Part 800).

The Proposed Action area is a vacant lot located in a low-density neighborhood of single-family homes in Reagan, Texas. Archer consulted the National Park Service NRIS data system, which inventories National Register of Historic Places-listed sites; reviewed the Texas Historical Commission on-line listings for Texas historic sites, performed a reconnaissance of the Area of Potential Effect, and submitted to the Texas Historical Commission (SHPO) FCC Form 620 to support an NHPA Section 106 Review. Based on this research and the determination by the SHPO that the Proposed Action will have no effect on historic resources, the Proposed Action would have no impact on districts, sites, buildings, structures or objects significant in American

history, architecture, archeology, engineering or culture, which are listed or are eligible for listing, in the National Register of Historic Places.

In the event that archeological deposits, including any Native American pottery, stone tools, bones, or human remains, are uncovered, the project shall be halted and the applicant shall stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. All archeological findings will be secured and access to the sensitive area restricted. The applicant will inform FEMA immediately, FEMA will consult with the SHPO or THPO, and Tribes and work in sensitive areas cannot resume until consultation is completed and appropriate measures have been taken to ensure that the project is in compliance with the National Historic Preservation Act.

A copy of the SHPO response letter is included in Exhibit 9.

4.5.2 American Indian/Religious Sites

Under the No Action alternative, there would be no short- or long-term impacts to American Indian Tribes or Religious Sites.

Consultation with Native American tribal groups and native Hawaiian organizations (NHO) regarding proposed projects and potential impacts to Native American religious sites is required under Section 106 of the NHPA and its implementing regulations, "Protection of Historic Properties" (36 CFR Part 800) and the Nationwide Programmatic Agreement on the Collocation of Wireless Antennas (adopted March 16, 2001), as well as the Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communications Commission effective March 7, 2005. On October 6, 2005 the FCC released a Declaratory Ruling (FCC 05-176) which clarified portions of the Nationwide Programmatic Agreement (NPA), addressing situations where a federally recognized Indian Tribe or Native Hawaiian Organization (NHO) has not responded to a Tower Construction Notification System (TCNS) notification, or to the applicant's and Commission's efforts to determine whether the Indian Tribe or NHO has an interest in participation in the review of the proposed project.

The Proposed Action area is a vacant lot located in a residential neighborhood of single-family homes in Reagan, Texas. Archer submitted inquiries to Indian Tribal authorities in the form of TCNS Submittal Number 72273. In addition, Archer sent follow-up letters to, telephoned, and/or e-mailed those tribes which had set their geographic preferences to determine if the proposed action would have an effect on Indian religious sites. Based on e-mail responses, letter responses, review of lists provided by tribes which detail the counties that they have an interest in and telephone interviews with tribal authorities, the Proposed Action would have no impact on Indian religious sites.

In the event that archeological deposits, including any Native American pottery, stone tools, bones, or human remains, are uncovered, the project shall be halted and the applicant shall stop

all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. All archeological findings will be secured and access to the sensitive area restricted. The applicant will inform FEMA immediately, FEMA will consult with the SHPO or THPO, and Tribes and work in sensitive areas cannot resume until consultation is completed and appropriate measures have been taken to ensure that the project is in compliance with the National Historic Preservation Act.

Copies of the TCNS filing and tribal correspondence are included in Exhibit 10.

4.6 Socioeconomic Resources

4.6.1 Environmental Justice

Under the No Action Alternative, there would be no short- or long-term impacts to environmental justice.

The Proposed Action area is a vacant lot located in a residential neighborhood of single-family homes in Reagan, Texas.

Under Executive Order 12898, Federal agencies are required to environmental and human health condition in low-income and minority level communities. The purpose of EO 12898 is to enact Environmental Justice to prevent and correct the disproportionate and adverse effect of a Federal action on the low-income or minority level populations.

The following demographics information was obtained from the U.S. Census Bureau website <http://quickfacts.census.gov/qfd/index.html>. Unemployment statistics were obtained from the United States Department of Labor Bureau of Labor Statistics website <http://www.bls.gov/lau/>.

TABLE 1 - Family Income and Poverty Rates

Location:	Falls County	Texas
2010 Population	17,866	25,145,561
Percent White	60.6%	70.4%
Percent African American	25.3%	11.8%
Percent Hispanic or Latino	20.8%	37.6%
Percent all other race and 2 or more races	2.8%	7.3%
Percent less than 18 years old	21.7%	27.3%
Percent 65 years old and over	16.1%	10.3%
2009 Per Capita Income	\$15,448	\$24,318
2009 Poverty Rate (Percent below poverty level income)	23.2%	17.1%
2011 Unemployment Rate (Percent of civilian labor force)	10.5%	8.5%

The Proposed Action would have no impact on environmental justice in the Proposed Action area. The Proposed Action area is not located within a low income or minority community. The Proposed Action would improve communication between emergency and first responders in the event of an emergency, therefore; all residents would benefit from the Proposed Action.

4.6.2 Hazardous Materials

Under the No Action alternative, there would be no short- or long-term impact to the Proposed Action area with regard to hazardous materials.

The Proposed Action area is a vacant lot located in a low density neighborhood of single-family homes in Reagan, Texas.

Use of hazardous materials at the Proposed Action area will be limited to the following actions:

- Fuel for heavy equipment and vehicles used during the construction process. Minimal wastes may be generated at the Proposed Action area during tower maintenance and construction. Any wastes generated will be properly disposed of off-site according to federal and state regulations. Based on the limited timeline for construction activities at the Proposed Action area and the limited potential for hazardous material releases and waste generation during construction and maintenance activities, the Proposed Action will have no significant impact with regard to hazardous materials.
- Liquefied petroleum gas will be stored in an approximate 250-gallon capacity aboveground storage tank on the Proposed Action area. The liquefied petroleum gas will be used to temporarily fuel an emergency electrical generator incidental to any local power outages. The containment of the liquefied petroleum gas within a storage tank will have no significant impact with regard to hazardous materials.
- Lead/acid batteries will be contained within the equipment shelter to provide emergency power incidental to any local power outages. The storage of lead/acid batteries within the equipment shelter will have no significant impact with regard to hazardous materials.

4.6.3 Noise

Under the No Action alternative, there would be no short- or long-term impact to the Proposed Action area with regard to any increase in noise.

Noise is generally referred to as unwanted sound which interferes with work, rest, communication, recreations, or sleep. During construction activities at the Proposed Action area, short-term noise increase from heavy equipment and vehicles involved in construction activities is to be expected. The Proposed Action area is a vacant lot located in a residential neighborhood of single-family homes in Reagan, Texas. Once construction is completed, long-term noise is expected to be minimal and result primarily from site maintenance and the periodic operation of an emergency electrical power generator on site. Based on the limited timeline of construction activities and the limited noise production after construction is completed, the Proposed Action would have no significant impact with regard to any increase in noise at the Proposed Action area.

4.6.4 Traffic

Under the No Action alternative, there would be no short- or long-term impact to the Proposed Action area with regard to any increase in traffic.

The Proposed Action area is a vacant lot located in a low-density residential neighborhood of single-family homes in Reagan, Texas. During construction activities at the Proposed Action area, short-term traffic increase from heavy equipment and vehicles involved in construction activities is anticipated. Once construction is completed, long-term traffic is expected to be minimal and result primarily from site maintenance. Based on the limited timeline of construction activities and the minimal traffic expected after construction is completed, the Proposed Action would have no significant impact with regard to any increase in traffic at the Proposed Action area.

4.6.5 Public Services And Utilities

Under the No Action alternative, there would be no short- or long-term impact to public services and utilities.

The Proposed Action area is a vacant lot located in a residential neighborhood of single-family homes in Reagan, Texas. During construction activities at the Proposed Action area, short-term interruption of public and utility service has the potential to occur. In the long-term, the communications infrastructure and communication utilities will be improved with the completion of the Proposed Action. Construction related interruptions do not have the potential to cause long-term interruptions in public services and utilities. Based on the limited potential of short-term utility and public service interruptions, the Proposed Action will not have a significant impact on public services or utilities. The construction contractor will be responsible for adhering to the Texas One-Call Law.

4.6.6 Public Health And Safety

Under the No Action alternative, no telecommunication tower would be constructed, thereby limiting communications between first responders and hindering aid to those affected by an emergency event. Under the No Action alternative there would be an impact on public health and safety.

The Proposed Action area is a vacant lot located in a residential neighborhood of single-family homes in Reagan, Texas. During construction activities at the Proposed Action area, potential health and safety concerns include the potential for workplace accidents. All OSHA regulation will be strictly adhered to during construction activities. Proper fencing and signage will be used in an effort to prevent accident or injury to the public or workers on site. Based on the use of preventive measures during construction at the Proposed Action area, the Proposed Action would have no significant impact on public health and safety. After construction has been completed, the Proposed Action would improve communication between emergency and first responders in

the event of an emergency. Based on the potential for the Proposed Action to improve emergency communications, the Proposed Action would have a beneficial impact on public health and safety.

4.7 Summary Table

Table 2 – Summary of Impacts

Affected Environment/Resource Area	Impacts	Agency Coordination/Permits	Mitigation/Best Management Practices
Geology, Soils, Seismicity	No Significant Impact	N/A	Soil disturbance will be limited to the project area and require the use of temporary fencing to control erosion during construction.
Air Quality	No Significant Impact	N/A	None
Climate Change	No Significant Impact	N/A	None
Water Quality	No Significant Impact	N/A	Soil disturbance will be limited to the project area and require the use of temporary fencing to control erosion during construction.
Wetlands	No Impact	N/A	None
Floodplains	No Impact	N/A	N/A
Coastal Resources	No Impact	N/A	N/A
Threatened and Endangered Species/Critical Habitats	No Impact	U.S. Fish and Wildlife consultation	None
Wildlife and Fish	No Impact	N/A	N/A
Migratory Birds	No Impact	N/A	Adoption of U.S. Fish and Wildlife Service mitigation measures as listed in Recommendations On Communications Tower Siting, Construction, Operation, and Decommissioning.
Historic Properties	No Impact	Texas State Historic Preservation Office	N/A
American Indian/Religious Sites	No Impact	Native American Tribal Consultations	N/A
Environmental Justice	No Impact	N/A	N/A
Hazardous Materials	No Significant Impact	N/A	None
Noise	No Significant Impact	N/A	None
Traffic	No Significant Impact	N/A	None
Public Service and Utilities	No Significant Impact	N/A	Construction contractor will adhere to the Texas One-Call Law.
Public Health and Safety	No Impact (potential beneficial Impact)	N/A	OHSA regulation followed at Proposed Action site, fencing and signage

5.0 Cumulative Impacts

Under the No Action alternative, there would be no short- or long-term cumulative impacts at the Proposed Action area.

Cumulative impacts are the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions.

There would be no cumulative impacts to geology, soil, seismicity, water resources, wetlands, floodplains, coastal resources, wildlife and fish, threatened or endangered species, migratory birds, historic properties, American Indian or religious sites, air quality, noise, infrastructure, utilities, traffic, waste management or socioeconomic resources. Long-term benefits of the Proposed Action include improving communication between emergency and first responders in the event of an emergency, natural disaster or terrorist action.

6.0 Agency Coordination, Public Involvement And Permits

The following agencies were contacted and invited to comment regarding the Proposed Action:

- The Southern Ute Tribe, Ignacio, CO
- The Comanche Nation, Lawton, OK
- The Wichita and Affiliated Tribes, Anadarko, OK
- The Tonkawa Tribe, Tonkawa, OK
- The Mescalero Apache Tribe, Mescalero, NM
- The Department of Arkansas Heritage
- The Oklahoma Historical Society
- The Texas Historical Commission
- The U.S. Fish and Wildlife Service
- The Texas State Historic Preservation Office
- The Federal Aviation Administration
- Falls County Judge, the Honorable Steve Sharp

Public involvement occurred in the form of a Public Notice posted in the Marlin Democrat on February 2, 2011. The Public Notice asked residents to notify Archer of any impact the Proposed Action may have on historic properties. Archer received no response to the Public Notice.

The availability of this EA will be advertised by public notice in the local weekly newspaper. Copies of the EA will be available locally. The public comment period will extend for a period of fifteen (15) days. The EA can also be viewed and downloaded from the FEMA's website at <http://www.fema.gov/plan/ehp/envdocuments/ea-region6.shtm>. If no substantive comments are

received, the EA will become final and the initial public notice will also serve as the final public notice. The EA will then be archived on FEMA's website at <http://www.fema.gov/library/>.

No Falls County or municipal permits are required for the Proposed Action.

A copy of the FAA *Determination of No Hazard to Air Navigation* is included in exhibit 11.

7.0 References

1. United States Department of Agriculture, National Resources Conservation Service
Web Soil Survey: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
2. U.S. Fish and Wildlife Service
National Wetlands Inventory: <http://www.fws.gov/wetlands/redirect.html>
Endangered Species Program: <http://www.fws.gov/endangered/>
3. FEMA
Floodplain Map Service Center:
<http://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1>
4. National Atlas of the United States
Mapmaker: <http://nationalatlas.gov/mapmaker>
5. U.S. Department of the Interior, National Parks Service
National Register of Historic Places:
<http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome>
6. Texas Historical Commission
Historic Sites Atlas: <http://atlas.thc.state.tx.us/>
7. U.S. Census Bureau
Quick Facts: <http://quickfacts.census.gov/qfd/index.html>
8. Federal Communications Commission, Universal Licensing System:
Tower Construction Notification System: <http://wireless.fcc.gov/uls/index.htm?job=home>
9. United States Department of Labor
Bureau of Labor Statistics: <http://www.bls.gov/lau/>

8.0 List Of Preparers

- This Environmental Assessment was prepared by Archer, Inc. at 200 Rufe Snow N. Suite 103, Keller, Texas, 76248 for the Heart of Texas Council of Governments. The following key personnel were involved in the preparation of this assessment:
 - **Bruce Hanford** is the Regional Manager of Archer's Southwest Regional Office, where he is responsible for client satisfaction and oversight of all company projects. He currently serves as Program Manager for Phase One Environmental Site Assessments and NEPA Evaluations in the Southwest Region, and provides oversight for all Archer Phase I Environmental Site Assessments performed throughout the U.S. With over 16 years of Environmental Consulting experience, Mr. Hanford has managed and/or performed over 3000 Phase I Environmental Site Assessments in nine states. In addition, Mr. Hanford serves as an internal consultant assessing for liability under CERCLA regulations. Mr. Hanford has performed Federal and state environmental regulation compliance audits at U.S. Army and National Guard facilities throughout the continental United States, and previously served as Project Manager and consultant for CERCLA potentially responsible party searches on behalf of the EPA and the Texas Commission on Environmental Quality. Mr. Hanford is a National Park Service Qualified Architectural Historian and exceeds the EPA's qualifications for an Environmental Professional [40 CFR Part 312].
 - **Erin Heinemann** is a Project Manager/Quality Control Manager for Archer's Southwest Regional Office. Ms. Heinemann performs and manages Phase I Environmental Site Assessments, NEPA Screening Assessments, and visual site inspections. Ms. Heinemann has managed over 200 such assessments across Texas, Oklahoma, Louisiana, and Arkansas. She evaluates for effects to threatened and endangered species and their habitats and evaluates for effects to cultural resources. She has prepared FCC Form 620 and Form 621 submittals for the State Historic Preservation Offices and prepared NEPA Environmental Assessment Reports. In addition, she serves as liaison with State Historic Preservation Officers and tribal authorities in ten states, establishing with those parties protocols for evaluating the possible effects of proposed telecommunication tower projects. Ms. Heinemann holds a Bachelor of Science degree in Environmental Conservation. Ms. Heinemann worked for four years in various environmental laboratories in accordance with NELAC regulations. While at the laboratories, she performed various analyses of Metals and General Chemistry samples and co-wrote and updated Standard Operating Procedure documents.
 - **Brandi McTee** is a Project Leader for Archer's Southwest Regional Office. Ms. McTee performs Phase I Environmental Site Assessments and NEPA Environmental Screening Reports. She has performed over 150 such assessments in three states. Her duties include evaluating the complexity of project assignments and determining the required cartography and level of historical research. She issues Freedom of Information Act and Texas Open Records Act requests and evaluates federal and state technical environmental reports. Ms. McTee manages vendors and contractors who support Archer projects. Ms. McTee holds a Bachelor of Science degree in Environmental Science.

Government Contributors

- **Kevin Jaynes**, CHMM, Regional Environmental Officer, FEMA Region 6
- **Alan Hermely**, Environmental Specialist, FEMA Region 6

Exhibit 1



View, to the north, from the proposed tower site.



View, to the east, from the proposed tower site.



View, to the south, from the proposed tower site.



View, to the west, from the proposed tower site.



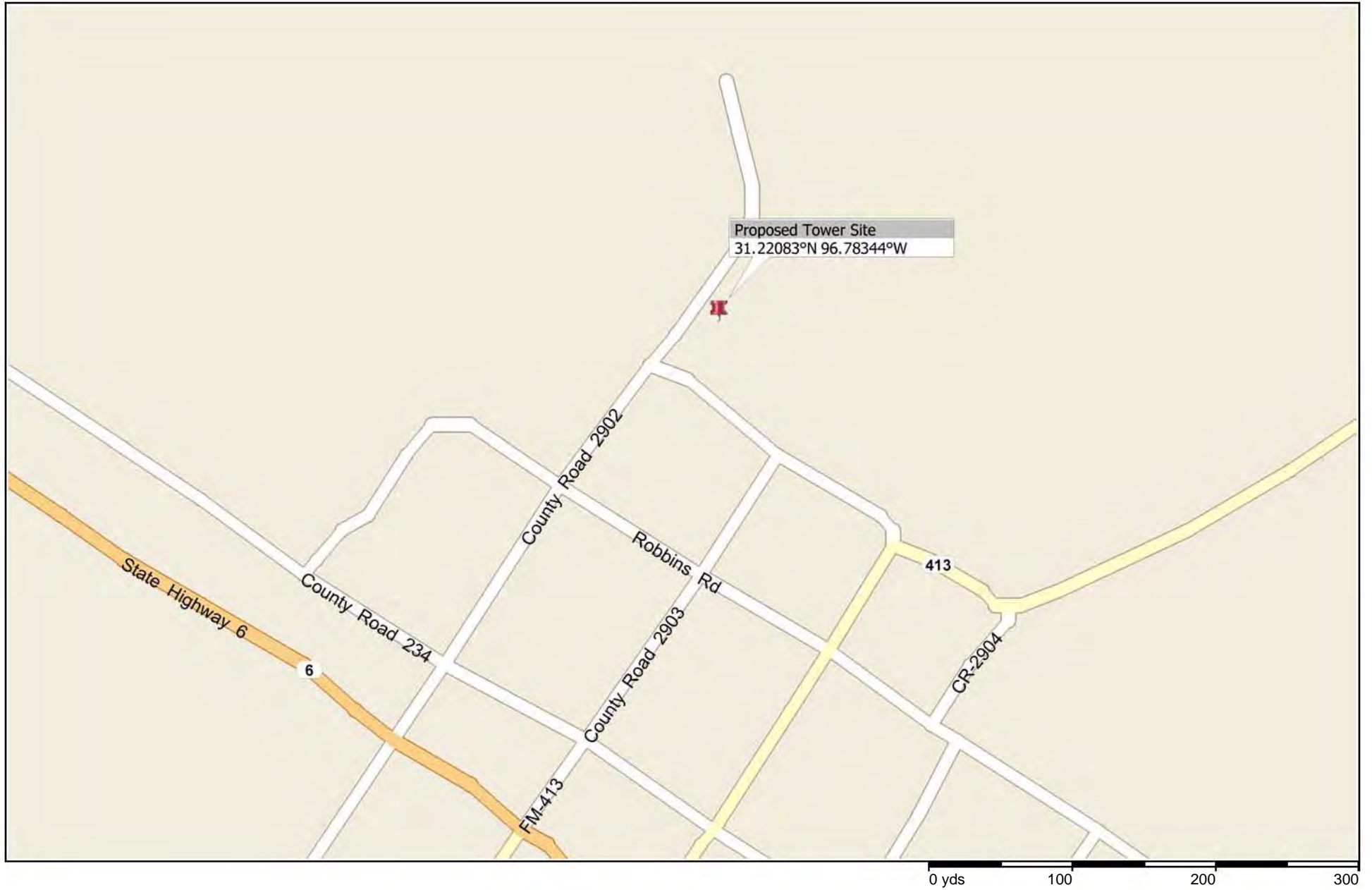
View to the northeast, of the proposed tower site (in foreground).



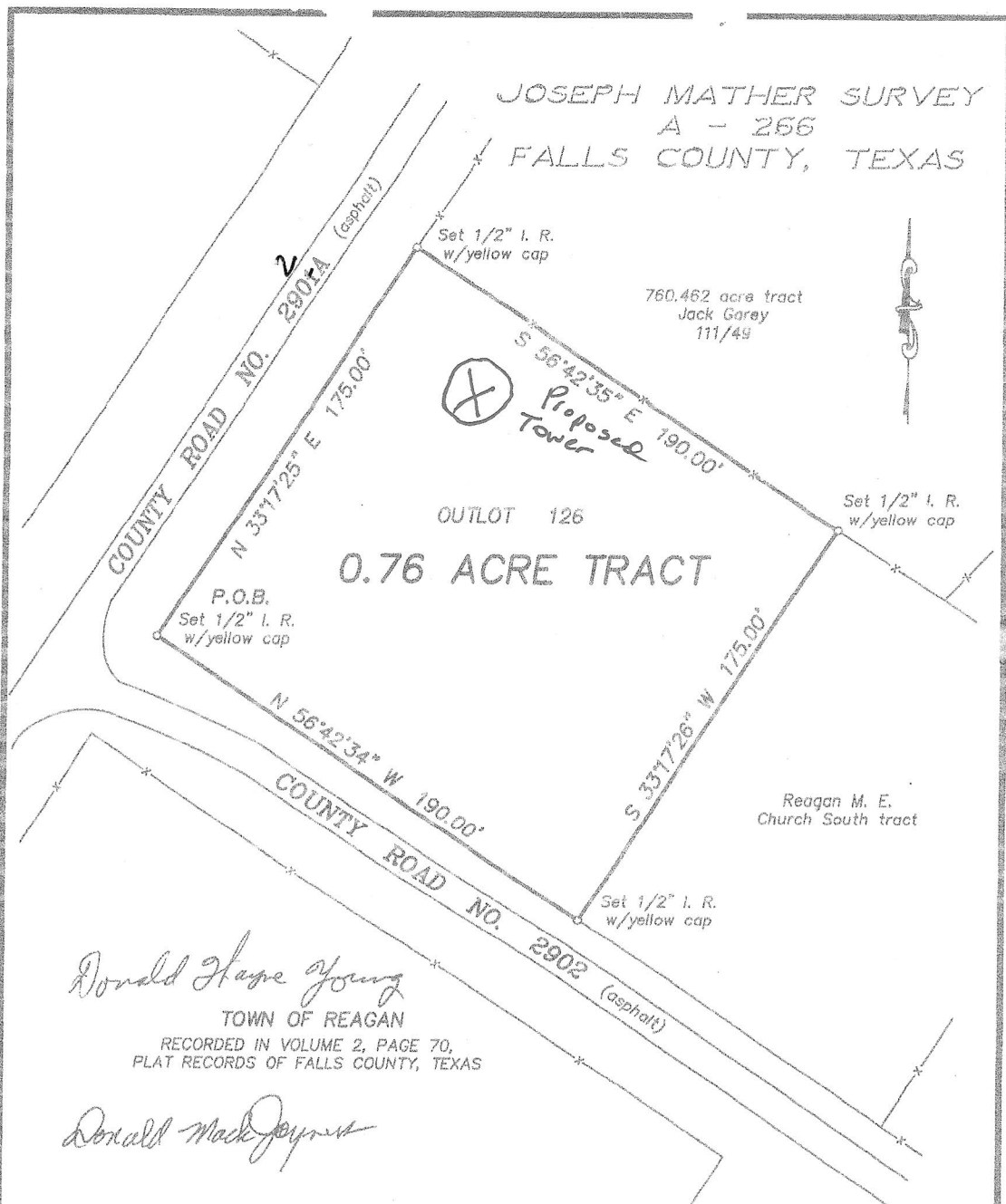
View to the southeast of the proposed tower site, in foreground.

Exhibit 2

Reagan Texas United States



JOSEPH MATHER SURVEY
A - 256
FALLS COUNTY, TEXAS



COUNTY ROAD NO. 2902A (asphalt)

COUNTY ROAD NO. 2902 (asphalt)

P.O.B.
Set 1/2" I. R.
w/yellow cap

Set 1/2" I. R.
w/yellow cap

760.462 acre tract
Jack Gorey
111/49

Set 1/2" I. R.
w/yellow cap

Reagan M. E.
Church South tract

Set 1/2" I. R.
w/yellow cap

Donald Hase Young
TOWN OF REAGAN
RECORDED IN VOLUME 2, PAGE 70,
PLAT RECORDS OF FALLS COUNTY, TEXAS

Donald Mack Jones

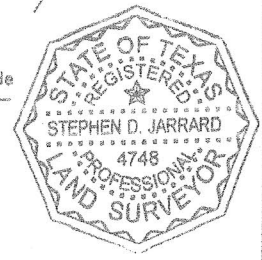
This plat is to accompany a fieldnote description, describing the 0.76 acre tract of land shown hereon.

There are no flood maps available for reference for this area of Falls County, Texas.

This survey was conducted by a Global Positioning System (GPS) therefore all bearings used herein are based on True Geodetic North.

I, Stephen D. Jarrard, do hereby certify that this plat correctly represents a survey made on the ground by me and that there are no apparent discrepancies, conflicts, encroachments, overlapping of improvements or visible utility lines, except as shown hereon.

Stephen D. Jarrard
May 18, 2009
Stephen D. Jarrard, Registered Professional Land Surveyor, No. 4748

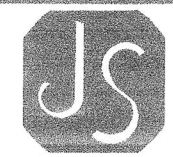


Handwritten notes:
34° 13' 15.05"
N
96° 47' 00"
461 W

JARRARD SURVEYING

LAND SURVEYOR

115 N. CENTRAL AVENUE, SUITE 2, P. O. BOX 1135
CAMERON, TEXAS (254) 697-3646 - FAX (254) 697-8776



SCALE: 1" = 50'	LOT SURVEY	DATE: 5-18-09
F.B. 77/37 GPS	ON A 0.76 ACRE TRACT OF LAND, BEING OUTLOT 126, TOWN OF REAGAN, FALLS COUNTY, TEXAS.	JOB NO. 3690

191
CR 2902

Exhibit 3

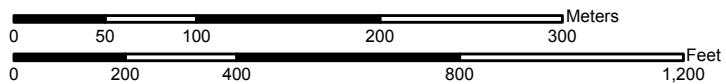
Soil Map—Falls County, Texas



96° 47' 17"




Map Scale: 1:4,280 if printed on A size (8.5" x 11") sheet.



MAP LEGEND






















Area of Interest (AOI)


 Area of Interest (AOI)


Soils

 Soil Map Units

Special Point Features




-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot

 Very Stony Spot

 Wet Spot

 Other


Special Line Features

-  Gully
-  Short Steep Slope
-  Other






Political Features

 Cities

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

MAP INFORMATION

Map Scale: 1:4,280 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 14N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Falls County, Texas
 Survey Area Data: Version 8, Oct 26, 2009

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Falls County, Texas (TX145)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
19	Crockett fine sandy loam, 0 to 1 percent slopes	1.0	1.0%
20	Crockett fine sandy loam, 1 to 3 percent slopes	40.6	44.3%
21	Crockett fine sandy loam, 2 to 5 percent slopes, eroded	8.3	9.1%
59	Tinn clay, frequently flooded	0.2	0.2%
63	Wilson loam, 0 to 1 percent slopes	41.6	45.4%
Totals for Area of Interest		91.7	100.0%

Falls County, Texas

20—Crockett fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

Elevation: 200 to 800 feet

Mean annual precipitation: 32 to 45 inches

Mean annual air temperature: 64 to 70 degrees F

Frost-free period: 230 to 275 days

Map Unit Composition

Crockett and similar soils: 100 percent

Description of Crockett

Setting

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Residuum weathered from shale of tertiary age

Properties and qualities

Slope: 1 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 10.0

Available water capacity: Moderate (about 6.7 inches)

Interpretive groups

Land capability (nonirrigated): 3e

Ecological site: Claypan Prairie 28-40" PZ (R086AY200TX)

Typical profile

0 to 9 inches: Fine sandy loam

9 to 17 inches: Clay

17 to 34 inches: Clay

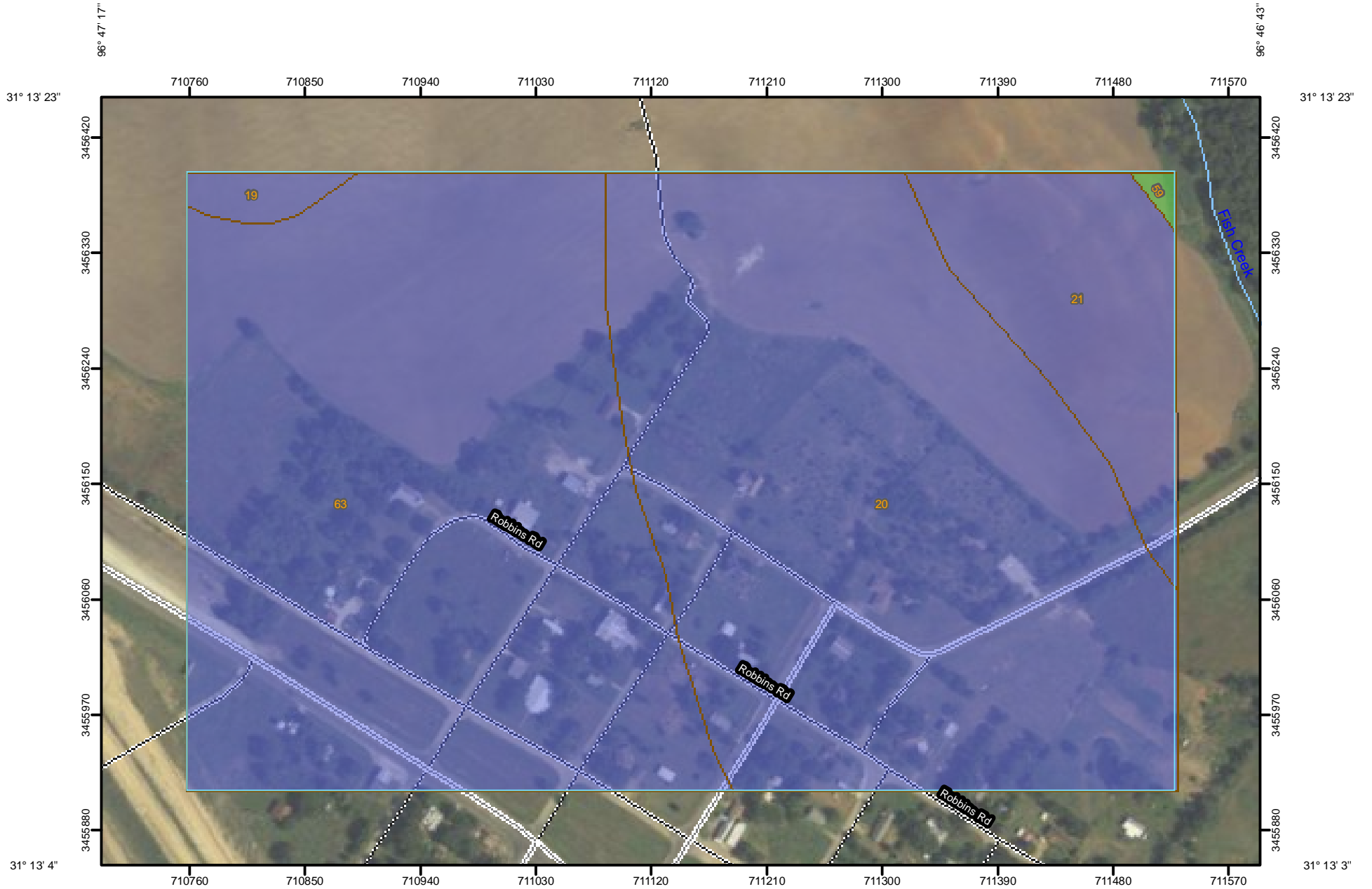
34 to 53 inches: Sandy clay loam

53 to 80 inches: Clay loam

Data Source Information

Soil Survey Area: Falls County, Texas
Survey Area Data: Version 8, Oct 26, 2009

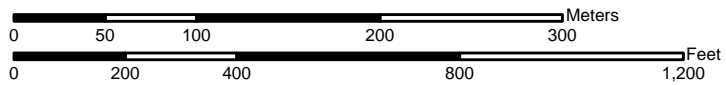
Hydric Rating by Map Unit—Falls County, Texas



96° 47' 17"




Map Scale: 1:4,280 if printed on A size (8.5" x 11") sheet.



96° 46' 43"

MAP LEGEND






Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Units


Soil Ratings

-  All Hydric
-  Partially Hydric
-  Not Hydric
-  Unknown Hydric
-  Not rated or not available






Political Features

 Cities

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

MAP INFORMATION

Map Scale: 1:4,280 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 14N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Falls County, Texas
Survey Area Data: Version 8, Oct 26, 2009

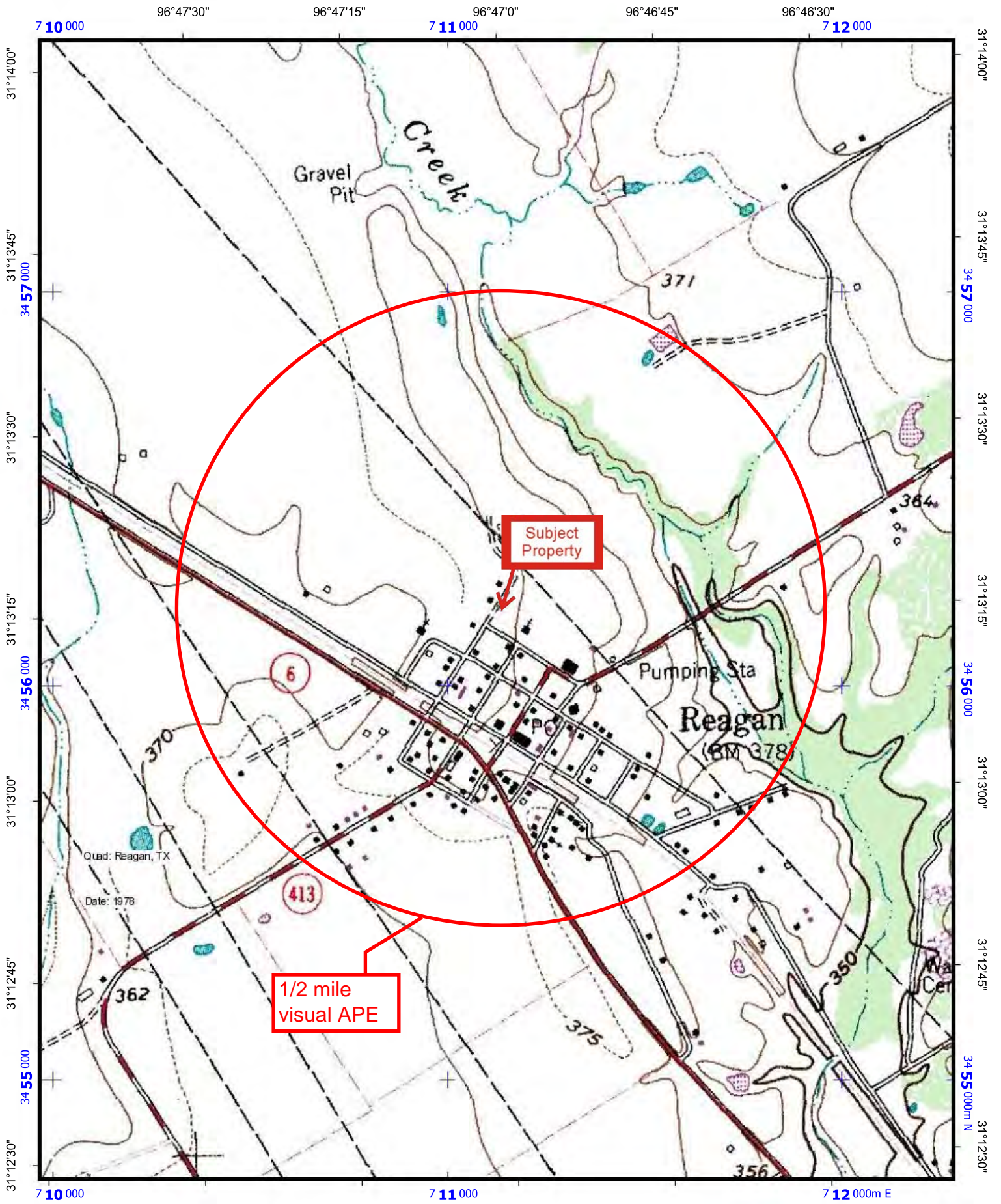
Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydric Rating by Map Unit

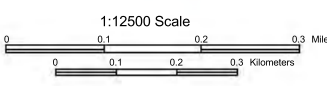
Hydric Rating by Map Unit— Summary by Map Unit — Falls County, Texas (TX145)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
19	Crockett fine sandy loam, 0 to 1 percent slopes	Not Hydric	1.0	1.0%
20	Crockett fine sandy loam, 1 to 3 percent slopes	Not Hydric	40.6	44.3%
21	Crockett fine sandy loam, 2 to 5 percent slopes, eroded	Not Hydric	8.3	9.1%
59	Tinn clay, frequently flooded	Partially Hydric	0.2	0.2%
63	Wilson loam, 0 to 1 percent slopes	Not Hydric	41.6	45.4%
Totals for Area of Interest			91.7	100.0%

Exhibit 4



Universal Transverse Mercator (UTM) Projection Zone 14
North American Datum of 1983 (NAD83)

1000 meter UTM / USNG / MGRS
Grid Zone Designation: 14R
100,000-m Squares: QV



Magnetic declination of 3E at center of map on
February 17, 2011

Exhibit 5

National Wetlands Inventory
Quad: Reagan TX

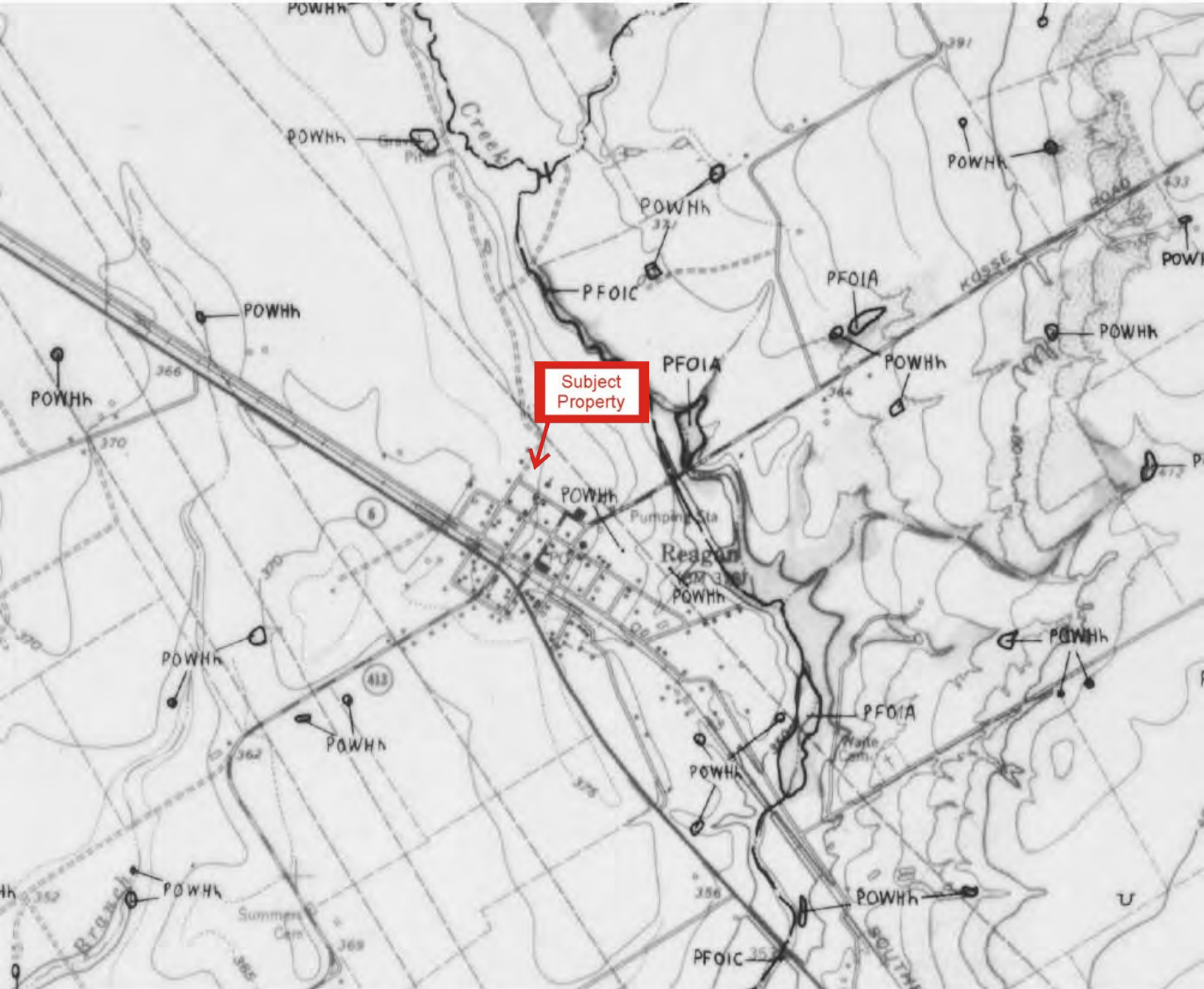


Exhibit 6



[Product Catalog](#) | [Map Search](#) | [Quick Order](#) | [Digital Post Office](#) | [Help](#)

[Log on](#)

[Home](#) > [Map Search Results](#)

Map Search Results

Unmapped Area(s)

Item ID	Community ID	Community Name
UNMAPPED_480805	480805	FALLS COUNTY UNINCORPORATED AREAS

[FEMA.gov](#) | [Accessibility](#) | [Privacy Policy](#) | [FAQ](#) | [Site Help](#) | [Site Index](#) | [Contact Us](#)

FEMA Map Service Center, P.O. Box 1038 Jessup, Maryland 20794-1038 Phone: (877) 336-2627
Adobe Acrobat Reader required to view certain documents. [Click here to download.](#)

Exhibit 7



U.S. Fish & Wildlife Service Species Reports

Environmental Conservation Online System

 Search

Species By County Report

The following report contains Species that are known to or are believed to occur in this county. Species with range unrefined past the state level are now excluded from this report. If you are looking for the Section 7 range (for Section 7 Consultations), please visit the [IPaC](#) application.

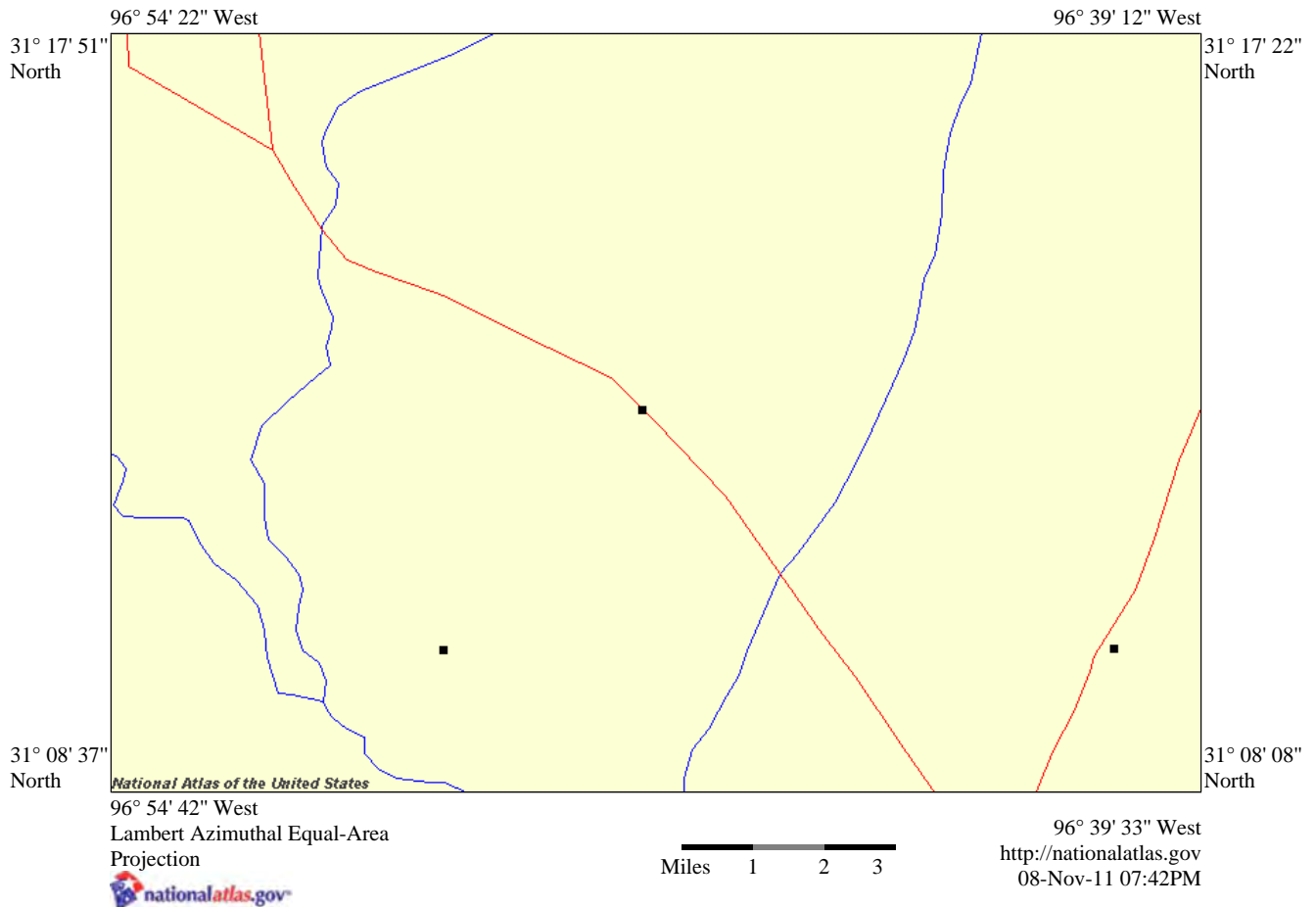
County: Falls, TX

Group	Name	Population	Status	Lead Office	Recovery Plan Name	Recovery Plan Action Status	Recovery Plan Stage
Birds	Whooping crane (<i>Grus americana</i>)	except where EXPN	Endangered	Aransas/matagorda Island National Wildlife Refuge Complex	Whooping Crane Recovery Plan, Final Third Revision	View Implementation Progress	Final Revision 3
	Bald eagle (<i>Haliaeetus leucocephalus</i>)	lower 48 States	Recovery	Rock Island Ecological Services Field Office	Recovery Plan for the Pacific Bald Eagle	View Implementation Progress	Final
					Southeastern States Bald Eagle Recovery Plan	View Implementation Progress	Final Revision 1
					Northern States Bald Eagle Recovery Plan	View Implementation Progress	Final
					Chesapeake Bay Bald Eagle Recovery Plan	View Implementation Progress	Final Revision 1
					Southwestern Bald Eagle Recovery Plan	View Implementation Progress	Final

Export options: [CSV](#) | [EXCEL](#) | [XML](#) | [PDF](#)

Last updated: November 8, 2011

Exhibit 8



Boundaries

Indian Lands

Source: [U. S. Geological Survey](http://www.usgs.gov)

Layer partially covered by another layer








Indian Lands

-  Indian Reservation
-  National Forest
-  National Historic Park
-  National Monument
-  National Park
-  National Wildlife Refuge
-  Public Domain Land
-  Water

Federal Lands

Source: [U. S. Geological Survey](http://www.usgs.gov)


Layer partially covered by another layer

-  Bureau of Land Management
-  Bureau of Reclamation
-  Department of Defense
-  Forest Service
-  Fish and Wildlife Service
-  National Park Service
-  Tennessee Valley Authority
-  Other

Wilderness Preservation System Areas


Source: [U. S. Geological Survey](http://www.usgs.gov)

Layer partially covered by another layer

-  Wilderness Areas

Public Land Survey System



Source: [U. S. Geological Survey](http://www.usgs.gov)

 Public Land Survey System

Map Reference


Cities and Towns

Source: [U.S. Geological Survey](#)

-  State Capitals
-  County Seats
-  Other Cities

Latitude/Longitude






Source: [U.S. Geological Survey](#)

 Latitude/Longitude

Transportation

Roads

Source: [U.S. Geological Survey](#)

-  Limited Access
-  Principal Highway
-  Through Highway
-  Other Roads
-  Ferry

Water

Streams and Waterbodies

Source: [U.S. Geological Survey](#)

- Streams and Waterbodies
-  Aqueduct, Canal, Ditch, Intracoastal Waterway, or Stream
 -  Bay, Estuary, or Ocean
 -  Canal, Lake, Reservoir, or Stream
 -  Dam
 -  Dry Lake
 -  Glacier
 -  Intermittent Lake or Reservoir
 -  Swamp or Marsh

Erin Heinemann

From: Moni_Belton@fws.gov
Sent: Tuesday, September 27, 2011 9:38 AM
To: Erin Heinemann
Subject: cell tower proposals
Attachments: ATTCH 1_Austin ESFO Sec 7 letter .pdf; ATTCH 2_Communication tower lights and avian collisions.pdf

Thank you for your letters dated September 6, 2011, requesting evaluation of AARCHER's proposal to build 195 foot high cell towers in Freestone and Falls County, Texas.

Attachment 1 provides guidance on Section 7 of the Endangered Species Act. We recommend you assess the project site for suitable habitat for listed species found in the above listed counties. Please include the entire project footprint and all activities associated with the proposed radio tower site, which may include but is not limited to the following; construction and staging areas, road upgrades for access, proposed utility line locations, temporary and permanent structures, and any areas proposed for vegetation removal and/or fill (gravel pads).

Migratory birds (e.g., waterfowl, shorebirds, passerines, hawks, owls, vultures, falcons) are afforded protection under the Migratory Bird Treaty Act (40 Stat. 755; 16 U.S.C. 703-712). Tall structures such as cell towers and electrical transmission lines have the potential to become obstructions for migratory and residential birds. Attachment 2 provides guidance on methods to reduce the frequency of avian collisions on communication towers.

If you have any additional questions or need additional information please call.

Thank you, Moni

Moni D. Belton
Fish and Wildlife Biologist
USFWS Ecological Services
17629 El Camino Real
Suite 211
Houston TX 77058-3051
281-286-8282 ext 233
281-488-5882 fax



United States Department of the Interior

FISH AND WILDLIFE SERVICE
10711 Burnet Road, Suite 200
Austin, Texas 78758
512 490-0057
FAX 490-0974



MAY 11 2011

Thank you for your request for threatened and endangered species information in the Austin Ecological Services Field Office's area of responsibility. According to Section 7(a)(2) of the Endangered Species Act and the implementing regulations, it is the responsibility of each Federal agency to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any federally listed species.

Please note that while a Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment, the Federal agency must notify the U.S. Fish and Wildlife Service (Service) in writing of such designation. The Federal agency shall also independently review and evaluate the scope and contents of a biological assessment prepared by their designated non-Federal representative before that document is submitted to the Service.

A county by county listing of federally listed threatened and endangered species that occur within this office's work area can be found at <http://www.fws.gov/southwest/es/EndangeredSpecies/lists/default.cfm>. You should use the county by county listing and other current species information to determine whether the direct or indirect effects of your action could affect listed species or their critical habitat off-site as well as on-site. A qualified individual should conduct surveys to determine potential effects to listed species.

After completing a habitat evaluation and/or any necessary surveys, you should evaluate the project for potential effects to listed species and make one of the following determinations:

- **No effect** – the proposed action will not affect federally listed species or critical habitat. A “no effect” determination does not require section 7 consultation and no coordination or contact with the Service is necessary. However, if the project changes or additional information on the distribution of listed or proposed species becomes available, the project should be reanalyzed for effects not previously considered.
- **May affect, but is not likely to adversely affect** – the project may affect listed species and/or critical habitat; however, the effects are expected to be discountable, insignificant, or completely beneficial. Certain avoidance and minimization measures may need to be implemented in order to reach this level of effects. The Federal agency or the designated non-Federal representative should seek written concurrence from the Service that adverse effects are not likely. Be sure to include all of the information and documentation used to reach your decision with your request for concurrence. The Service must have this documentation before issuing a concurrence.

TAKE PRIDE[®]
IN AMERICA 

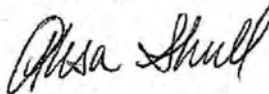
- **Is likely to adversely affect** – adverse effects to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. If the overall effect of the proposed action is beneficial to the listed species but also is likely to cause some adverse effects to individuals of that species, then the proposed action “is likely to adversely affect” the listed species. An “is likely to adversely affect” determination requires the Federal action agency to initiate formal Section 7 consultation with this office.

Regardless of your determination, the Service recommends that you maintain a complete record of the evaluation, including steps leading to the determination of affect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related articles.

The Service’s Consultation Handbook is available online to assist you with further information on definitions, process, and fulfilling Endangered Species Act requirements for your projects at http://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf

If we can further assist you in understanding a federal agency’s obligations under the Endangered Species Act, please contact Tanya Sommer at 512/490-0057 extension 222.

Sincerely,



Adam Zerrenner
Field Supervisor

acting for

Communication towers, lights, and birds: successful methods of reducing the frequency of avian collisions

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Abstract. Estimates suggest that each year millions of birds, predominantly Neotropical migrating songbirds, collide with communication towers. To determine the relative collision risks that different nighttime Federal Aviation Administration (FAA) communication tower obstruction lighting systems pose to night-migrating birds, we compared fatalities at towers with different systems: white strobe lights only; red strobe-like lights only; red, flashing, incandescent lights only; and red, strobe-like lights combined with non-flashing, steady-burning, red lights. Avian fatality data used to compare these tower light systems were collected simultaneously in Michigan on 20 consecutive days during early morning hours during peak songbird migration at 24 towers in May and September 2005 (total = 40 days). Twenty-one towers were 116–146 m above ground level (AGL), and three were ≥ 305 m AGL. During the two 20-day sample periods, we found a mean of 3.7 birds under 116–146 m AGL towers equipped with only red or white flashing obstruction lights, whereas towers with non-flashing/steady-burning lights in addition to the flashing lights were responsible for 13.0 fatalities per season. Kruskal-Wallis test, ANOVA, Student's *t* test, and multiple comparisons procedures determined that towers lit at night with only flashing lights were involved in significantly fewer avian fatalities than towers lit with systems that included the FAA "status quo" lighting system (i.e., a combination of red, flashing lights and red, non-flashing lights). There were no significant differences in fatality rates among towers lit with red strobes, white strobes, and red, incandescent, flashing lights. Results from related studies at the same towers in May and September 2004 and September 2003 provide ancillary support for these findings. Our results suggest that avian fatalities can be reduced, perhaps by 50–71%, at guyed communication towers by removing non-flashing/steady-burning red lights. Our lighting change proposal can be accomplished at minimal cost on existing towers, and such changes on new or existing towers greatly reduce the cost of tower operation. Removing non-flashing lights from towers is one of the most effective and economically feasible means of achieving a significant reduction in avian fatalities at existing communication towers.

Key words: collision; communication towers; fatality reduction; lighting systems; Michigan, USA; neotropical migratory songbird.

INTRODUCTION

For more than 50 years Nearctic–Neotropical migratory birds have been documented to collide with communication towers (Aronoff 1949). Past research suggests these birds, primarily night-migrating songbirds, are either attracted to or disoriented by the pilot navigational safety nighttime lighting systems on these structures, especially when night skies are overcast, foggy, or when there is precipitation often associated with weather fronts (e.g., Cochran and Graber 1958, Caldwell and Wallace 1966, Avery et al. 1976).

However, there are only a few studies that have attempted to assess how lights influence bird behavior at communication towers. These studies included either turning off Federal Aviation Administration (FAA)-approved lights on communication towers or comparing bird behavior at communication towers lit with different types of obstruction lighting. Larkin and Frase (1988) used tracking radar to show that with fog and low cloud ceiling, night migrants appeared to be attracted to lights on a tall (>305 m above ground level [AGL]), guyed communication tower, but flew away when lights were extinguished. Cochran and Graber (1958) and Avery et al. (1976) used counts of bird call notes and ceilometers (spotlights) to observe night-migrating birds that were congregated and flying near tall (>305 m AGL), guyed communication towers equipped with standard FAA obstruction lights. Similarly, when these researchers temporarily extinguished tower lights the birds dispersed

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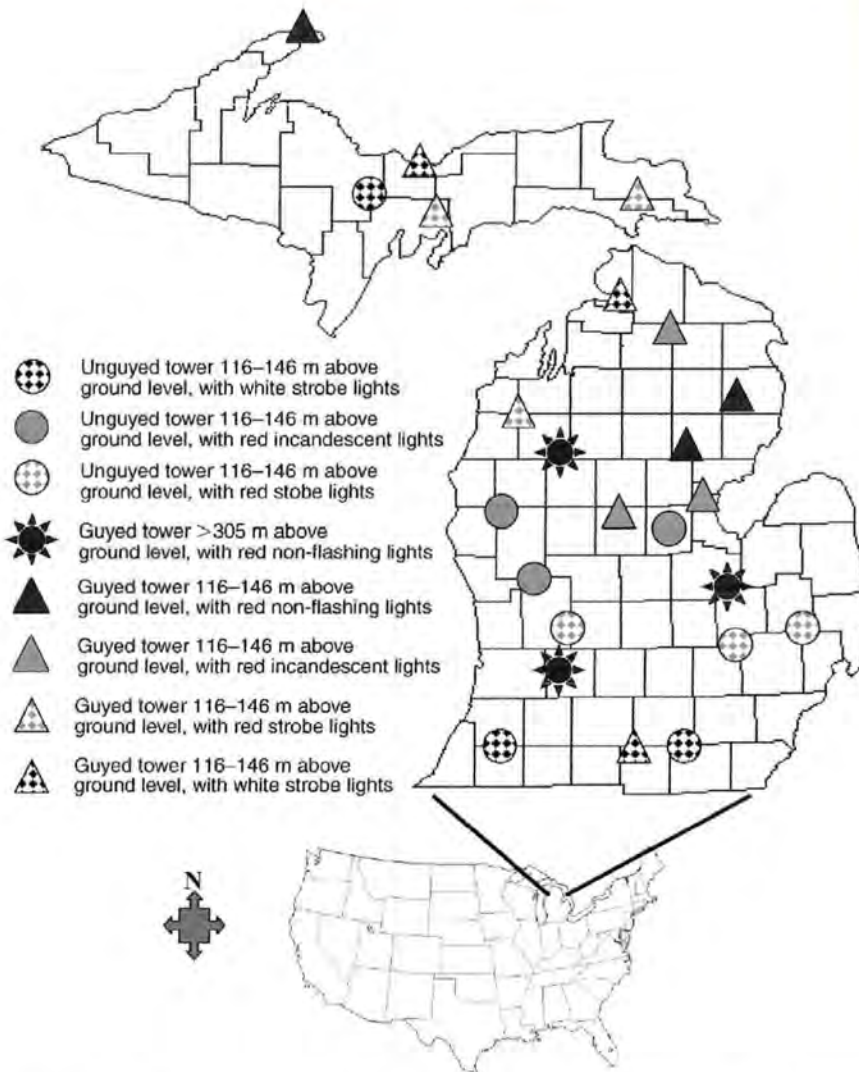


FIG. 1. Map of communication towers included in study of avian collisions in Michigan, USA.

from the tower area. Gauthreaux and Belser (2006) used a vertically pointing image intensifier to observe that more night migrants flew in circular, curvilinear flight patterns near a guyed communication tower (>305 m AGL) with red, flashing, incandescent lights (L-864) (Fig. 1) and steady-burning, red lights (L-810) than at a nearby a guyed tower (>305 m AGL) of similar height equipped only with white strobes (L-865). Most recently, a study by Kerlinger et al. (P. Kerlinger, J. Gehring, W. P. Erickson, and R. Curry, *unpublished manuscript*) at several utility-scale wind turbine installations showed that there was no detectable difference in fatality rates between wind turbines deployed with red, strobe-like L-864 lights and turbines with no FAA obstruction lighting.

Resource managers and tower owners need effective and economical methods of reducing the numbers of

these avian collisions. Our study was the first to simultaneously monitor fatalities of migratory birds at communication towers of the same height and support systems (both guyed and unguyed, Fig. 1) that had been equipped with different types of nighttime lighting systems (i.e., obstruction lighting; Fig. 2). The objective of our study was to determine whether there were fewer collisions at communication towers 116–146 m AGL equipped only with flashing lights of various types (i.e., strobes and flashing incandescent lights) and colors (i.e., red and white) as opposed to towers equipped with the standard type of FAA obstruction lights that include red, flashing, L-864 strobe-like lights intermixed at different heights with steady-burning (non-flashing), red, L-810 FAA lights (Fig. 1). In addition, we sought to determine whether there were differences in fatality rates among towers equipped with white strobes; red,

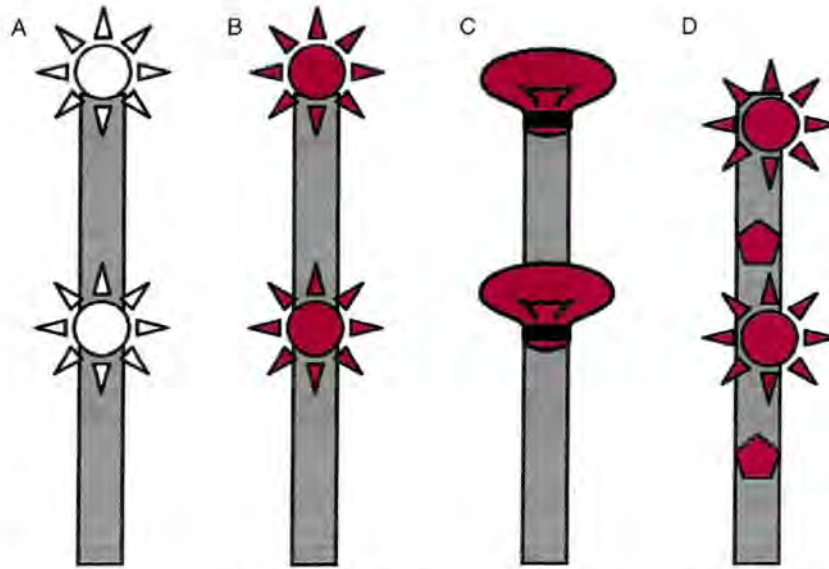


FIG. 2. Four different communication tower obstruction lighting systems were installed on the Michigan Public Safety Communication System (MPSCS) towers. All lighting systems were 116–146 m above ground level. (A) Three guyed and three unguayed towers with white strobes (L-865) at the top and mid levels; no non-flashing (L-810) incandescent lights. (B) Three guyed and three unguayed towers with red strobes (L-864) at the top and mid levels; no non-flashing (L-810) incandescent lights. (C) Three guyed and three unguayed towers with red, flashing (L-864), incandescent lights at the top and mid levels; no non-flashing (L-810), incandescent lights. (D) Three guyed towers with red strobes (L-864) at the top and mid levels; with red, non-flashing (L-810), incandescent lights at three-quarters and one-third the height of the tower (current/status quo lighting system for many communication towers, including MPSCS towers). The areas under these towers were simultaneously and systematically searched for bird carcasses during 20 consecutive mornings surrounding the peak of songbird migration in the spring and fall of 2005.

strobe-like lights; and red, incandescent, flashing lights of the same height and with towers of different heights. By quantifying differences in avian fatalities at towers with different lighting systems, we can provide tower owners, operators, and regulators with specific recommendations on methods to reduce avian fatalities at existing and future towers.

STUDY AREA AND METHODS

Research was conducted at communication towers distributed throughout the Upper and Lower Peninsula, Michigan, USA (between 46°33.85' N, 90°25.06' W and 41°44.48' N, 83°28.51' W; Fig. 1). To test for differences in the numbers of avian collisions at towers with different lighting systems, we chose 21 towers (116–146 m AGL) from the Michigan Public Safety Communications System (MPSCS). They were randomly selected from ~150 MPSCS towers within the 116–146 m height category, after all ~170 towers were stratified by guyed or unguayed support systems. If a randomly selected tower was within 1.6 km of an extensively lighted area (e.g., large urban area), we eliminated that tower from the sample and randomly selected another tower to avoid lighting bias. This procedure prevented a potential bias in which communication tower lights might be less visible to birds or “washed-out” from sky glow in the surrounding areas (Caldwell and Wallace 1966). Similarly, we avoided those towers associated with “antenna

farms” (i.e., congregations of additional communication tower[s] within 0.81 km) and towers on ridge tops to avoid additional potentially confounding variables. Three towers >305 m AGL were selected based on access granted by tower owners and an effort to disperse the study towers throughout the state. Two of the MPSCS towers were selected nonrandomly. One was selected at the urging of individuals associated with wildlife agencies and environmental organizations who believed the site, located on a large peninsula extending into Lake Superior, was used by large numbers of migrating songbirds. The other nonrandomly selected tower was included after discussions and consultation with members of the Kirtland’s Warbler (*Dendroica kirtlandii*) Recovery Team. The latter tower was in close proximity to this endangered species’ breeding area.

We randomly assigned nighttime lighting systems to MPSCS towers 116–146 m AGL. Given that the FAA currently only allows towers to be lit at night with white strobes (L-865) or red, flashing lights (L-864) combined with red, non-flashing lights (L-810), we were required to request marking and lighting variances from the FAA for those towers selected for change (see Plate 1). After receiving marking and lighting variances, personnel at the MPSCS changed the tower lights to study specifications. The following lighting systems were each installed at three guyed towers and three unguayed towers: (1) white strobes (at the top and at one-half the height of the

tower); (2) red, strobe-like lights (at the top and at one-half the height of the tower); and (3) red, flashing, incandescent lights (at the top and at one-half the height of the tower) (Fig. 2). Three guyed towers were maintained with the status quo red, strobe-like lights (at the top and at one-half the height of the tower) combined with red, non-flashing lights (L-810) at one-third and three-quarters the height of the tower (i.e., status quo; Fig. 2). The three guyed towers >305 m AGL had standard, red, flashing, incandescent lights (L-864) combined with non-flashing, incandescent lights (L-810).

Carcass searches

Considering that the majority of tower collisions are thought, based on a preponderance of literature, to occur during migration, technicians sampled for carcasses on 20 consecutive days capturing the peak period of spring and fall migration based on current and historical reviews of seasonal migration data. The 20-day search period each season allowed for a diversity of weather conditions, including the inclement weather frequently associated with avian tower collisions occurring during migration. In 2005, the towers were searched 10–29 May and 7–26 September. Technicians arrived at the towers at or before dawn in an effort to prevent diurnal and crepuscular scavengers from removing carcasses. Searching the same tower every day, each technician conducted tower searches simultaneously at his/her designated towers. Using flagged, straight-line transects, technicians walked at a rate of 45–60 m/min and searched for carcasses within 5 m on either side of each transect (Erickson et al. 2003; see Plate 1). Transects covered a circular area under each tower with a radius equal to 90% the height of the tower. Bird carcasses were placed in plastic bags, and the following data were recorded: tower identification number, date of collection, closest transect, distance from tower, azimuth to the tower, estimated number of days since death, observer's name, and preliminary species identification. Once bagged and labeled, carcasses were frozen for later species verification. The appropriate U.S. Fish and Wildlife Service and Michigan Department of Natural Resources (MDNR) permits were maintained by J. Gehring, who also secured Institutional Animal Care and Use Committee protocol approval (number 07-03) from Central Michigan University, Mt. Pleasant, Michigan, USA.

Observer detection and carcass removal trials

Since technicians are unable to observe all bird carcasses under communication towers because of dense vegetation, observer fatigue, human error, scavenging by predators, and injured birds that may escape detection, it was necessary to quantify each technician's observer detection rate and the rate of carcass removal (Erickson et al. 2003). Observer detection trials were conducted with technicians at the designated tower once each field

season. Technicians were not notified when the observer detection trial would occur or how many and what species of bird carcasses would be placed at their tower site. By placing 10 bird carcasses within the tower search area, we quantified the proportion of bird carcasses detected by each technician. For observer detection trials we used bird carcasses representing a range of sizes and colors, but they were predominantly Brown-headed Cowbirds (*Molothrus ater*) spray-painted to simulate the plumage of migrating songbirds. Bird carcasses used for observer detection trials were also painted with an "invisible" paint that glowed fluorescent colors when viewed under a black light. When analyzing the study data, the "invisible" paint prevented any confusion between birds that had collided with the towers and birds placed in the plots for observer detection trials.

Similarly, technicians placed 10–15 bird carcasses (predominantly Brown-headed Cowbirds) immediately adjacent to the edges of his/her designated communication tower's search area and monitored the daily removal (e.g., scavenging) of carcasses during the study period. Using these data we calculated a scavenging or removal rate (Erickson et al. 2003). Bird carcasses used in the removal trials were not painted, as this foreign scent might have discouraged scavengers from removing carcasses. Both observer detection trial birds and removal trial birds were placed in a range of habitats characteristic of the individual tower search areas.

Statistical analyses

Given the relatively small sample sizes we used the Kruskal-Wallis test combined with Tukey's honestly significant difference (hsd) multiple comparison procedures to test for differences among the tower types (lighting systems, guyed/unguyed, medium/tall height) from spring and fall 2005 (Zar 1998). To specifically examine the differences in avian fatalities among towers lit with different lighting systems we combined both spring and fall 2005 data and compared, using ANOVA, the data from guyed, medium-height towers, and we also examined the data from towers with status quo lighting studied in fall 2003 and spring and fall 2004. We used Fisher least significant difference (LSD) multiple comparisons on these data after testing for significant differences (Zar 1998). We also used a two-sample *t* test on the combined data to compare the numbers of avian fatalities at guyed, medium-height towers lit with a combination of flashing lights and non-flashing lights to the numbers of avian fatalities at guyed, medium-height towers with only red or white flashing obstruction lights. Raw data were used when testing for significant differences among tower types, not data adjusted for scavenging and observer detection rates.

We used bootstrapping (5000 iterations) to estimate the mean and standard deviation of the observer detection rates (Manly 1997, Erickson et al. 2003). Using methods developed by Western EcoSystems Technology (Cheyenne, Wyoming, USA), we used the

TABLE 1. Comparison of bird carcasses found in Michigan, USA, during 20 days of spring migration in 2005 at 24 communication towers with different lighting systems approved by the Federal Aviation Administration.

Height category	Light system	No. towers searched	Carcasses found	
			Number	Mean \pm SE
Unguyed				
116–146 m	white strobe (L-865)	3	3	1.00 \pm 1.00
	red strobe (L-864)	3	4	1.33 \pm 0.88
	red, flashing incandescent (L-864)	3	4	1.33 \pm 0.67
Guyed				
116–146 m	white strobe (L-865)	3	3	1.00 \pm 0.58
	red strobe (L-864)	3	12	4.00 \pm 1.00
	red, flashing incandescent (L-864)	3	8	2.67 \pm 0.33
	status quo (flashing and steady-burning, red lights) (L-864 and L-810)	3	37	12.3 \pm 4.84
≥ 305 m	status quo (flashing and steady-burning, red lights) (L-864 and L-810)	3	132	44.00 \pm 11.55
Total, all towers		24	203	

mean observer detection rate and the carcass removal rate specific for each individual tower to calculate adjustment multipliers by which to correct the observed number of birds per tower. This adjustment method considered the probability that carcasses not found on one day could be found on the following days, depending on the rate of carcass removal (W. Erickson, *personal communication*). These two interacting variables were used to determine a mean carcass detection probability and the related adjustment multiplier specific to each tower.

We used statistical software SPSS (2001) for Kruskal-Wallis and related multiple comparisons with an $\alpha = 0.10$. We used XLSTAT 2006.5 (Addinsoft USA 2006) for ANOVA, related multiple comparisons, and Student's *t* test with an $\alpha = 0.10$.

RESULTS

During the 20-day study period in the spring 2005, searches at 24 towers detected 203 birds of 47 species (Tables 1 and 2), while the fall 2005 searches of 24 towers detected 173 birds representing 42 species (Tables 2 and 3). Most species found under the communication towers were night-migrating songbirds (Table 2). In spring 2005 the three most common bird species found were Red-eyed Vireo (*Vireo olivaceus*), Gray Catbird (*Dumetella carolinensis*), and Ovenbird (*Seiurus aurocapillus*). In fall 2005 Blackpoll Warbler (*Dendroica striata*), Red-eyed Vireo, and Mourning Dove (*Zenaidura macroura*) were the most common species that collided with study towers. The greatest number of carcasses found in one night was 16 at a tower >305 m AGL, whereas at 116–146 m towers the greatest number found at a single tower for a single night was eight.

The observer detection rate (via bootstrapping) was 0.31 ± 0.04 (i.e., 31% of carcasses detected; mean \pm SD) in spring 2005 and 0.24 ± 0.31 (i.e., 24% of carcasses detected) in fall 2005. Carcasses placed near the tower search areas for removal trials (e.g., scavenging) remained on the ground for 8.61 ± 4.88 d in the spring 2005 and

6.69 ± 2.98 d in the fall 2005. Including both observer detection rates and carcass removal rates we estimated the adjustment multipliers specific to each tower to range between 1.18 and 2.83 (1.74 ± 0.52) in the spring 2005 and 1.58 and 5.07 (2.45 ± 0.87) in the fall 2005.

Kruskal-Wallis tests revealed significant differences among tower types in both spring 2005 ($\chi^2 = 13.33$, $df = 7$, $P = 0.06$) and fall 2005 ($\chi^2 = 13.71$, $df = 7$, $P = 0.06$). In spring 2005 multiple comparisons determined that guyed towers >305 m AGL were involved in more avian fatalities than all medium towers regardless of the medium tower's lighting system or support system ($P = 0.10$). Multiple comparisons also determined that medium guyed towers illuminated with both non-flashing/steady-burning red lights (L-810s) and flashing, red, strobe-like lights were involved in more avian fatalities than towers lit only with white strobes (both unguyed and guyed) ($P = 0.10$). Similarly, analysis of data from fall 2005 determined that more birds were found under guyed towers >305 m AGL than under all other medium towers, regardless of the medium tower's lighting system or support system ($P = 0.03$). Although the same trends were present, no statistical differences were found among the remaining tower lighting and support system categories in the fall 2005 data.

ANOVA of the data collected at only guyed, medium-height towers from both 2005 seasons combined detected a significant difference among the different lighting systems ($F = 3.55$, $df = 3, 23$, $P = 0.03$). Fisher's LSD test determined that towers illuminated during the night with flashing lights (L-864) in addition to non-flashing lights (L-810) were involved in significantly more avian fatalities than towers lit during the night with only white strobes (L-865, $P < 0.01$), towers lit with only red, flashing, incandescent lights (L-864, $P = 0.02$), and towers lit with only red, strobe-like lights (L-864, $P = 0.04$). Provided that non-flashing lights, L-810s, were not illuminated, there were no statistical differences among the guyed, medium towers lit only with flashing lights (i.e., red strobes, white strobes, or red, incandes-

TABLE 2. The number of total of avian fatalities (by species) at 24 communication towers located throughout Michigan, USA, during May 2005 and September 2005 (20 days each month).

Bird species	Spring 2005		Fall 2005		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Wild Turkey (<i>Meleagris gallopavo</i>)	2	<1	2	1	4	1
Ruffed Grouse (<i>Bonasa umbellus</i>)	3	1	1	<1	4	1
Ring-necked Pheasant (<i>Phasianus colchicus</i>)	1	<1			1	<1
Mourning Dove (<i>Zenaida macroura</i>)	1	<1	13	8	14	4
Hairy Woodpecker (<i>Picoides villosus</i>)	1	<1			1	<1
Northern Flicker (<i>Colaptes auratus</i>)			1	<1	1	<1
Yellow-bellied Flycatcher (<i>Empidonax flaviventris</i>)	2	<1			2	1
Blue Jay (<i>Cyanocitta cristata</i>)	3	1	1	<1	4	1
House Wren (<i>Troglodytes aedon</i>)	2	<1			2	1
Winter Wren (<i>Troglodytes troglodytes</i>)	1	<1			1	<1
Marsh Wren (<i>Cistothorus palustris</i>)	1	<1			1	<1
Red-breasted Nuthatch (<i>Sitta canadensis</i>)			1	<1	1	<1
White-breasted Nuthatch (<i>Sitta carolinensis</i>)			1	<1	1	<1
American Robin (<i>Turdus migratorius</i>)	4	2	1	<1	5	1
Wood Thrush (<i>Hylocichla mustelina</i>)	5	3			5	1
Swainson's Thrush (<i>Catharus ustulatus</i>)	3	1	4	2	7	2
Veery (<i>Catharus fuscescens</i>)	6	3			6	2
Brown Thrasher (<i>Toxostoma rufum</i>)			1	<1	1	<1
Gray Catbird (<i>Dumetella carolinensis</i>)	22	11			22	6
Cedar Waxwing (<i>Bombycilla cedrorum</i>)	1	<1	3	2	4	1
Yellow-throated Vireo (<i>Vireo flavifrons</i>)	1	<1	1	<1	2	1
Red-eyed Vireo (<i>Vireo olivaceus</i>)	26	13	12	7	38	10
Philadelphia Vireo (<i>Vireo philadelphicus</i>)	1	<1	1	<1	2	1
Black-and-white Warbler (<i>Mniotilta varia</i>)	1	<1	3	2	4	1
Tennessee Warbler (<i>Vermivora peregrina</i>)	1	<1	3	2	4	1
Hooded Warbler (<i>Wilsonia citrina</i>)	1	<1			1	<1
Nashville Warbler (<i>Vermivora ruficapilla</i>)			10	6	10	3
Yellow Warbler (<i>Dendroica petechia</i>)	12	6	1	<1	13	3
Magnolia Warbler (<i>Dendroica magnolia</i>)	2	<1	4	2	6	2
Yellow-rumped Warbler (<i>Dendroica coronata</i>)	1	<1	1	<1	2	1
Cape May Warbler (<i>Dendroica tigrina</i>)			4	2	4	1
Black-throated Blue Warbler (<i>Dendroica caerulescens</i>)	1	<1	2	1	3	1
Cerulean Warbler (<i>Dendroica cerulea</i>)	1	<1			1	<1
Black-throated Green Warbler (<i>Dendroica virens</i>)	1	<1	3	2	4	1
Blackburnian Warbler (<i>Dendroica fusca</i>)	1	<1			1	<1
Chestnut-sided Warbler (<i>Dendroica pensylvanica</i>)	5	3	3	2	8	2
Bay-breasted Warbler (<i>Dendroica castanea</i>)	1	<1	2	1	3	1
Blackpoll Warbler (<i>Dendroica striata</i>)			20	12	20	5
American Redstart (<i>Setophaga ruticilla</i>)	5	3	2	1	7	2
Pine Warbler (<i>Dendroica pinus</i>)			2	1	2	1
Ovenbird (<i>Seiurus aurocapilla</i>)	17	8	5	3	22	6
Northern Waterthrush (<i>Seiurus noveboracensis</i>)			1	<1	1	<1
Mourning Warbler (<i>Oporornis philadelphia</i>)			3	2	3	1
Common Yellowthroat (<i>Geothlypis trichas</i>)	15	7	4	2	19	5
Wilson's Warbler (<i>Wilsonia pusilla</i>)			3	2	3	1
Canada Warbler (<i>Wilsonia canadensis</i>)	2	<1			2	1
Baltimore Oriole (<i>Icterus galbula</i>)	2	<1			2	1
Brown-headed Cowbird (<i>Molothrus ater</i>)	2	<1			2	1
Scarlet Tanager (<i>Piranga olivacea</i>)			1	<1	1	<1
Rose-breasted Grosbeak (<i>Pheucticus ludovicianus</i>)	6	3	2	1	8	2
Indigo Bunting (<i>Passerina cyanea</i>)	3	1			3	1
House Finch (<i>Carpodacus mexicanus</i>)	1	<1			1	<1
Savannah Sparrow (<i>Passerculus sandwichensis</i>)	3	1	2	1	5	1
Chipping Sparrow (<i>Spizella passerina</i>)	3	1	1	<1	4	1
White-throated Sparrow (<i>Zonotrichia albicollis</i>)	1	<1	2	1	3	1
White-crowned Sparrow (<i>Zonotrichia leucophrys</i>)	1	<1	1	<1	2	1
Lincoln's Sparrow (<i>Melospiza lincolni</i>)	1	<1	1	<1	2	1
Swamp Sparrow (<i>Melospiza georgiana</i>)	1	<1	2	1	3	1
Common Grackle (<i>Quiscalus quiscula</i>)			1	<1	1	<1

TABLE 2. Continued.

Bird species	Spring 2005		Fall 2005		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Unknown species						
Duck†			1	<1	1	<1
Rail‡	1	<1			1	<1
Woodpecker†	1	<1			1	<1
Icteridae†			3	2	3	1
Crow size†			3	2	3	1
Thrush size‡	14	7	13	8	27	7
Warbler/vireo size‡	9	4	21	12	30	8
Total	203		173		376	

Note: All names of birds follow the American Ornithologists' Union (1998).

† Bird carcass heavily scavenged, preventing identification of species.

‡ Bird lodged high in tree, preventing identification of species.

cent, flashing lights; $P \geq 0.42$). The two-sample t test supported the ANOVA results, demonstrating that towers lit during the night with non-flashing lights (L-810) in addition to flashing lights (L-864) were involved in more avian fatalities than towers lit only with flashing lights (L-864 or L-865, $t = -3.24$, $P < 0.01$).

Data collected from towers studied in fall 2003 and spring and fall 2004 (Table 4) provide additional support for the differences between the numbers of fatalities at 116–146 m AGL MPSCS towers with standard lighting (L-864 and L-810 combined) and towers with only flashing lights. At three guyed towers studied in fall 2003 a mean of 7.3 fatalities was found during a 20-d search period. At 11 guyed towers searched during spring 2004, the mean fatality rate per tower was 11.0, and in fall 2004, at 12 towers, the fatality rate per tower was 4.25 fatalities per tower. The numbers of fatalities at towers with standard FAA lighting during the 2003 and 2004 studies were generally much greater than at the towers with only flashing, red lights studied in spring and fall 2005.

DISCUSSION

There is little quantitative information about the relationship between the types of FAA lights on

communication towers and the attraction of birds to those towers. Regulatory agencies, including the USFWS, FAA, and Federal Communications Commission (FCC), have expressed interest in additional scientific data on this topic, in the form of studies such as this one.

Gauthreaux and Belser (2006) used a vertically pointing image intensifier to observe and compare the flight paths of birds in an unlit control area to the flight paths of birds near a communication tower with white strobes (L-865) and to the flight paths of birds near a tower lit with red, flashing, incandescent lights (L-864) combined with steady-burning, red lights (L-810). Birds flew in straight flight paths over the control area, but birds flying near the lit communication towers deviated from a straight flight path, demonstrated by curvilinear movement, and tended to concentrate near the towers. More birds congregated at the tower lit with red, flashing, incandescent lights combined with steady-burning, red lights than at towers lit only with white strobes. They also concluded that there had been no studies of bird flight behaviors at communication towers illuminated only with flashing, red lights. Our research results appear to be consistent with and complement the results of Gauthreaux and Belser (2006). If birds

TABLE 3. Comparison of bird carcasses found in Michigan, USA, during 20 days of fall migration in 2005 at 24 communication towers with different lighting systems approved by the Federal Aviation Administration.

Height category	Light system	No. towers searched	Carcasses found	
			Number	Mean \pm SE
Unguyed				
116–146 m	white strobe (L-865)	3	2	0.67 ± 0.67
	red strobe (L-864)	3	1	0.33 ± 0.33
	red, flashing incandescent (L-864)	3	2	0.67 ± 0.33
Guyed				
116–146 m	white strobe (L-865)	3	8	2.67 ± 2.19
	red strobe (L-864)	3	8	2.67 ± 2.19
	red, flashing incandescent (L-864)	3	14	4.67 ± 0.33
	status quo (with steady-burning, red lights) (L-864 and L-810)	3	18	6.00 ± 2.65
≥ 305 m	status quo (flashing and steady-burning, red lights) (L-864 and L-810)	3	120	40.00 ± 18.03
Total, all towers		24	173	

TABLE 4. The numbers of bird carcasses found in Michigan, USA, at communication towers with status quo lighting approved by the Michigan Public Safety Communications System (MPSCS) (red, flashing lights [L-864] and steady-burning, red lights [L-810]) in fall (15 September–4 October) 2003, spring (10–29 May) 2004, and fall (7–26 September) 2004.

Tower support, by search period	Height category	No. towers searched	Carcasses found	
			Number	Mean \pm SE
Fall 2003				
Unguyed	116–146 m	3	0	0.00 \pm 0.00
Guyed	116–146 m	3	22	7.3 \pm 1.2
Total		6	22	
Spring 2004				
Unguyed	116–146 m	9	5	0.6 \pm 0.2
Guyed	116–146 m	11	121	11.0 \pm 2.6
	\geq 305 m	3	71	23.7 \pm 11.8
		2†	68†	34.0 \pm 10
Total		23	197	
		22†	194†	
Fall 2004				
Unguyed	116–146 m	9	12	1.33 \pm 0.62
			9‡	1.00 \pm 0.33
Guyed	116–146 m	12	51	4.25 \pm 0.65
			3	31.00 \pm 5.86
Total		24	156	
			153‡	

† Data removed for an outlier tall tower because of poor conditions for carcass searches and an unusual tower guy system.

‡ Data without birds likely plucked on site by raptors. The songbirds' causes of death could have been predation, tower collision, or combinations of the two.

concentrate more often at towers with status quo FAA lights that include non-flashing, red lights than at towers with only white, flashing strobes, as Gauthreaux and Belser report, it seems reasonable that more would collide with the former type of tower. We found more fatalities at towers with status quo lights that included non-flashing, red lights as opposed to towers lit with only white, flashing strobes; red, strobe-like lights; and red, flashing, incandescent lights.

Kerlinger et al. (P. Kerlinger, J. Gehring, W. P. Erickson, and R. Curry, *unpublished manuscript*) qualitatively compared fatality rates of night migrants at utility-scale wind turbines lit only with red, flashing, strobe-like lights (L-864) with fatality rates at turbines that were not lit. They found no difference within a given wind power facility and suggested that red, strobe-like lights did not appear to attract or disorient night migrants, resulting in collisions with wind turbines ranging in height from just over 60 m to nearly 122 m in height. These data support our results and interpretation that flashing red lights did not attract or disorient as many birds as non-flashing lights. Turbines are typically lit at the top of the nacelle with one or two (side-by-side at the same height) simultaneously flashing strobes or strobe-like lights (usually red, occasionally white) and usually lack steady-burning lights. We recommend that the FAA consider the need for non-flashing lights on communication towers (FAA 2000).

Our study is the first to compare collision rates at communication towers equipped with different types of

FAA obstruction lighting. The results also provide the first scientifically validated and economically feasible means of reducing fatalities of night migrating birds at existing communication towers. Our results strongly suggest that by extinguishing non-flashing, red L-810 lights on towers in the 116–146 m height range, leaving only the L-864 (red strobe or red incandescent) flashing lights or L-865 (white strobe) flashing lights, fatality rates could be reduced by as much as ~50–70% (based on data from 2005). The fatality rates at towers with only flashing lights averaged 3.7 fatalities per 20-day migration study period vs. 13.0 fatalities at towers with steady-burning, red lights combined with flashing lights. These reductions are further supported by considering the mean numbers of birds collected at towers with steady-burning, red lights combined with flashing lights in previous field seasons (Table 4). By simply removing the L-810 lights from all communication towers nationwide, it is possible that one to two million or more bird collisions with communication towers might be averted each year, assuming that about four million birds per year collide with communication towers, an estimate that the USFWS considers to be conservative (estimate from Manville 2001, 2005). Although similar research has determined that two additional methods of reducing avian collisions include reducing tower height and eliminating guy support wires, guyed towers (or guy wires of those towers) now standing are not likely to be removed from the landscape and tower heights are not likely to be altered (J. Gehring, P. Kerlinger, and A.

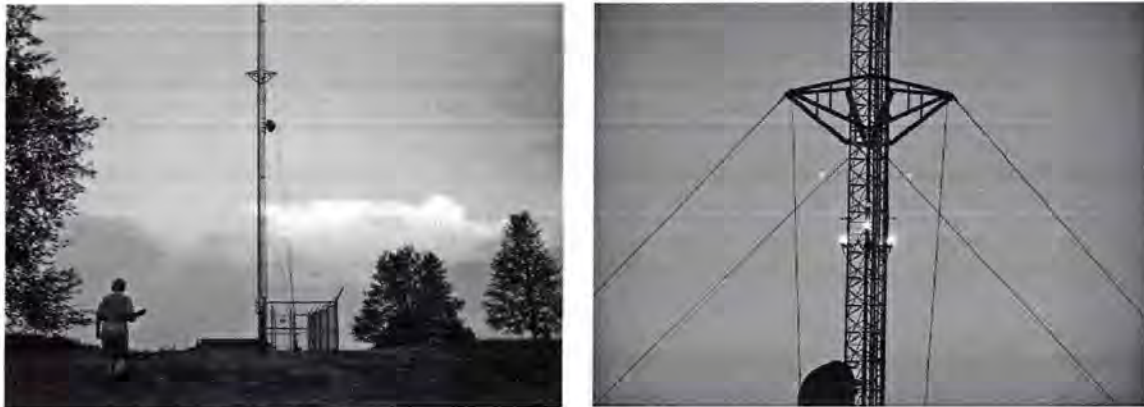


PLATE 1. In May and September 2003–2005, technicians searched under Michigan, USA, communication towers for avian carcasses. Migratory birds collide with these structures and their supporting guy wires during periods of attraction to the nighttime lighting systems. Numbers of avian carcasses were compared among towers with different Federal Aviation Administration lighting systems. Photo credits: J. Gehring.

Manville, *unpublished manuscript*). Therefore, changing FAA obstruction lighting provides virtually the only means of reducing fatalities at existing towers.

The elimination of steady-burning, red L-810 lights, leaving only flashing L-864 lights, would also be beneficial for tower owners. Although avian fatalities would not be completely eliminated, the numbers of avian fatalities would undoubtedly be greatly reduced. The economic incentive for removing L-810 lights is substantial. Electric consumption, and therefore electric costs, as well as tower maintenance costs (changing of bulbs, labor and bulb cost) would be greatly reduced. The elimination of these same lights would also benefit the FCC and the FAA. Given that the FCC licenses towers under mandates of the National Environmental Policy Act (NEPA), this means that reducing fatalities would allow them to improve their federal compliance with the Migratory Bird Treaty Act (MBTA; Manville 2007) and “avoid or minimize impacts” under the mitigation requirements of NEPA. Provided that light system changes would maintain safety for aviators, changes to the FAA advisory circular that would allow the extinguishing of non-flashing L-810 lights would also help the FAA to comply with the intent of the MBTA, as well as the intent of Executive Order 13186, the Migratory Bird Executive Order signed in 2001. We recommend that removal of the L-810 lights from towers should be encouraged by both the FCC and FAA.

Currently, only the white strobe (L-865) system is an FAA-approved nighttime lighting system for communication towers that lack non-flashing lights. While white strobe systems provide an FAA-approved option to significantly reduce avian collisions, there is a general public disapproval of these systems because they are more noxious to humans than are red strobes or red non-flashing lights. In addition, converting communication towers with traditional lighting systems to white strobe systems can be prohibitively costly for tower

companies. We did not find a statistical difference in avian fatality rates among towers lit only with the different types of flashing lights (white strobe vs. red strobe vs. red, flashing incandescent). Our results suggested that the flashing of a light was more important in reducing avian collisions than was the color of the light. The FAA is currently exploring the possibility of changing their recommendations to allow the non-flashing, red L-810 lights to be extinguished on towers lit with standard red light systems. Given their mandate for air safety, the FAA will need to conduct proper tests of tower visibility or conspicuity to pilots before such recommendations are changed in order to allow this cost-efficient and effective option for tower companies.

Although the removal of steady-burning, red L-810 lights from guyed towers in the 116–146 m AGL height range resulted in dramatically fewer fatalities, we did not test whether similar light changes on taller towers (>147 m AGL) reduced fatalities at those towers. A follow-up study is currently focused on taller guyed towers, specifically by replicating the design used in this study. By searching for carcasses simultaneously under towers that are similar in structure but have different lighting systems, it should be relatively easy to determine whether the removal of steady-burning, red L-810 lights will prove effective at taller towers. Though there are fewer tall towers than towers in the 116–146 m AGL height range, towers ≥ 305 m AGL are responsible for several times the numbers of fatalities than shorter towers (J. Gehring, P. Kerlinger, and A. Manville, *unpublished manuscript*). Additional studies of the relationship between the light systems of taller towers and avian fatality rates should be the focus of future conservation research.

ACKNOWLEDGMENTS

We are extremely grateful to the many dedicated technicians who collected these data and the tower operators who granted

them access to sites. The following organizations and agencies provided invaluable support: Michigan Natural Features Inventory, United States Fish and Wildlife Service (sponsor), Curry & Kerlinger, LLC (sponsor), Michigan State Police (sponsor), United States Forest Service, Ornithological Council, Michigan Department of Natural Resources (sponsor), Central Michigan University (sponsor), National Fish and Wildlife Foundation (sponsor), Federal Aviation Administration, Federal Communications Commission, and Western EcoSystems Technology, Inc. We are especially grateful to the FAA for allowing lighting variances on 18 towers. Numerous individuals provided essential and diverse support to the authors and to the project, and for this we are very grateful.

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Exhibit 9

TEXAS HISTORICAL COMMISSION
real places telling real stories

March 31, 2011

Bruce Hanford
Regional Manager
Archer, Inc.
200 Rufe Snow North, Suite 103
Keller, Texas 76248

Re: *Project review under Section 106 of the National Historic Preservation Act of 1966, as amended:
Proposed construction of a 199' self-supporting lattice wireless telecommunications tower, 191 County
Road 2902, Reagan, Falls County (FCC/106) THC Tracking #201109537*

Dear Mr. Hanford:

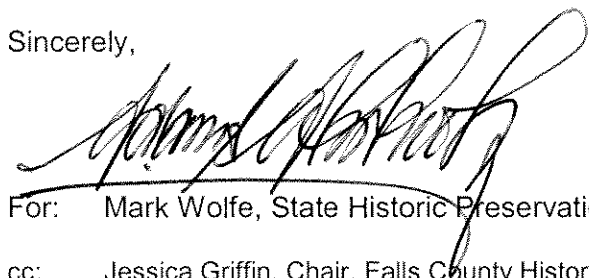
Thank you for your correspondence describing the above referenced project. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer (SHPO), the Executive Director of the Texas Historical Commission (THC).

The review staff in the THC History Programs Division, led by Linda Henderson, has reviewed the project documentation received by our office on March 2, 2011. The staff has determined that the Reagan United Methodist Church, the Reagan United Methodist Church Parsonage, and the Reagan First Baptist Church are *eligible* for listing in the National Register of Historic Places (NRHP).

The review staff in the THC Division of Architecture, led by Adam Alsobrook has reviewed the documentation for the proposed undertaking. The staff concurs with your determination that the project as proposed would have *no adverse effect* to these properties eligible for listing in the NRHP. No further coordination with our office is required for this particular undertaking under Section 106 of the National Historic Preservation Act.

Thank you for your cooperation in this federal review process and for your efforts to preserve the irreplaceable heritage of Texas. **If you have any questions concerning our review or if we can be of further assistance, please contact Adam Alsobrook at 512/463-6183.**

Sincerely,



For: Mark Wolfe, State Historic Preservation Officer

cc: Jessica Griffin, Chair, Falls County Historical Commission

MW/aa

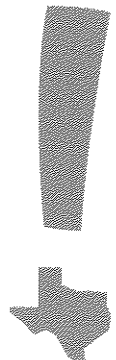


Exhibit 10

Bruce Hanford

From: towernotifyinfo@fcc.gov
Sent: Tuesday, January 04, 2011 2:25 PM
To: Bruce Hanford
Subject: Proposed Tower Structure Info - Email ID #2695516

Dear Bruce Hanford,

Thank you for submitting a notification regarding your proposed construction via the Tower Construction Notification System. Note that the system has assigned a unique Notification ID number for this proposed construction. You will need to reference this Notification ID number when you update your project's Status with us.

Below are the details you provided for the construction you have proposed:

Notification Received: 01/04/2011

Notification ID: 72273
Tower Owner Individual or Entity Name: Falls County, Texas
Consultant Name: Bruce Hanford
Street Address: 200 Rufe Snow North
Suite 103
City: Keller
State: TEXAS
Zip Code: 76248
Phone: 817-431-1593
Email: bhanford@aarcherinc.com

Structure Type: UTOWER - Unguyed - Free Standing Tower
Latitude: 31 deg 13 min 15 sec N
Longitude: 96 deg 47 min 0.4 sec W
Location Description: 191 County Road 2902
City: Reagan
State: TEXAS
County: FALLS
Ground Elevation: 115.5 meters
Support Structure: 54.9 meters above ground level
Overall Structure: 59.4 meters above ground level
Overall Height AMSL: 174.9 meters above mean sea level

Bruce Hanford

From: towernotifyinfo@fcc.gov
Sent: Friday, January 07, 2011 2:02 AM
To: Bruce Hanford
Cc: kim.pristello@fcc.gov; diane.dupert@fcc.gov
Subject: NOTICE OF ORGANIZATION(S) WHICH WERE SENT PROPOSED TOWER CONSTRUCTION NOTIFICATION INFORMATION - Email ID #2696319

Dear Sir or Madam:

Thank you for using the Federal Communications Commission's (FCC) Tower Construction Notification System (TCNS). The purpose of this electronic mail message is to inform you that the following authorized persons were sent the information you provided through TCNS, which relates to your proposed antenna structure. The information was forwarded by the FCC to authorized TCNS users by electronic mail and/or regular mail (letter).

Persons who have received the information that you provided include leaders or their designees of federally-recognized American Indian Tribes, including Alaska Native Villages (collectively "Tribes"), Native Hawaiian Organizations (NHOs), and State Historic Preservation Officers (SHPOs). For your convenience in identifying the referenced Tribes and in making further contacts, the City and State of the Seat of Government for each Tribe and NHO, as well as the designated contact person, is included in the listing below. We note that Tribes may have Section 106 cultural interests in ancestral homelands or other locations that are far removed from their current Seat of Government. Pursuant to the Commission's rules as set forth in the Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communications Commission (NPA), all Tribes and NHOs listed below must be afforded a reasonable opportunity to respond to this notification, consistent with the procedures set forth below, unless the proposed construction falls within an exclusion designated by the Tribe or NHO. (NPA, Section IV.F.4).

The information you provided was forwarded to the following Tribes and NHOs who have set their geographic preferences on TCNS. If the information you provided relates to a proposed antenna structure in the State of Alaska, the following list also includes Tribes located in the State of Alaska that have not specified their geographic preferences. For these Tribes and NHOs, if the Tribe or NHO does not respond within a reasonable time, you should make a reasonable effort at follow-up contact, unless the Tribe or NHO has agreed to different procedures (NPA, Section IV.F.5). In the event such a Tribe or NHO does not respond to a follow-up inquiry, or if a substantive or procedural disagreement arises between you and a Tribe or NHO, you must seek guidance from the Commission (NPA, Section IV.G). These procedures are further set forth in the FCC's Declaratory Ruling released on October 6, 2005 (FCC 05-176).

1. NAGPRA Coordinator Neil B Cloud - Southern Ute Tribe - Ignacio, CO - electronic mail and regular mail

Details: Under the following 6 conditions, the Southern Ute Indian Tribe does not need to review the proposed tower (PLEASE NOTE THAT THE FORM 620 IS MANDATORY IF THE PROPOSED TOWER NEEDS TO BE REVIEWED):

The Southern Ute Indian Tribe does NOT need to review proposed extensions to increase the height of already existing towers.

The Southern Ute Indian Tribe does NOT need to review proposed collocations on already existing towers.

The Southern Ute Indian Tribe does NOT need to review proposed structures that are to be placed on rooftops.

The Southern Ute Indian Tribe does NOT need to review proposed structures that are within a city's limits, if the proposed structure is to be located on a disturbed road that has already been gravelled.

The Southern Ute Indian Tribe does NOT need to review proposed structures that are to be placed on pastures that have already been plowed or cultivated.

The Southern Ute Indian Tribe does NOT need to review proposed structures that are merely extensions in height of an already existing structure.

For all other proposed areas, the Southern Ute Indian Tribe DOES NEED a copy of the Form 620. Please send the Form 620 via regular mail and be sure to INCLUDE THE FAX # of the company in order to receive a reply:

Neil B. Cloud, NAGPRA Coordinator, P.O. Box 737, Mail Stop #73, 116 Capote Drive, Ignacio, Colorado 81137

If the applicant/tower builder receives no response from the Southern Ute Indian Tribe within 30 days AFTER YOU HAVE SENT THE FORM 620 to the Tribe (including color photographs and resumes), then the Southern Ute Indian Tribe has no interest in participating in pre-construction review for the site.

2. NAGPRA Assistant Kelly Glancy - Comanche Nation - Lawton, OK - regular mail
Details: Under the following conditions, the Comanche Tribe does not need to review proposed projects that involve pre-existing above-ground feature additions or modifications: the proposed project is within the city limits, if the proposed structure is to be located on a previously disturbed site that has been previously evaluated.

If the proposed project does not meet the aforementioned conditions, the Comanche Tribe THPO/NAGPRA Office now requires photographs of the proposed site taken from all 4 directions (north, south, east and west). Additionally, we do not require, but request that you provide us with an aerial view of the proposed site whenever possible.

We also now require a written legal description of the proposed site (such as the section, range, township, etc.), and request that you provide us with any existing reports or surveys relating to the proposed site.

Please send these materials to us via regular or express mail, since we require hard copies (not electronic copies). Please send to: Comanche Nation Office of Historic Preservation, c/o Kelly Glancy - THPO/NAGPRA Assistant, P.O. Box 908, Lawton, OK 73502. Thank you!

Sincerely,
Jimmy Arterberry, THPO/NAGPRA Director

3. TCNS Representative & GAP Technician Jason Prince - Wichita and Affiliated Tribes - Anadarko, OK - electronic mail and regular mail

If the applicant/tower builder receives no response from the Wichita and Affiliated Tribes within 30 days after notification through TCNS, the Wichita and Affiliated Tribes has no interest in participating in pre-construction review for the proposed site. The Applicant/tower builder, however, must immediately notify the Wichita and Affiliated Tribes in the event archaeological properties or human remains are discovered during construction, consistent with Section IX of the Nationwide Programmatic Agreement and applicable law.

4. Tribal Administrator Joshua Waffle - Tonkawa Tribe - Tonkawa, OK - electronic mail

5. Tribal Historic Preservation Officer Holly B Houghten - Mescalero Apache Tribe - Mescalero, NM - electronic mail and regular mail

Details: The Mescalero Apache Tribe does not wish to review towers that are being placed upon existing buildings. For review of all other proposed towers located within the Mescalero Apache Tribe's traditional homelands, the Tribe will charge a \$125.00 review fee. Please send this fee to the Historic Preservation Office, Mescalero Apache Tribe,

P.O. Box 227, Mescalero, NM 88340. Please make the check payable to the Mescalero Apache Tribe and note on the check, or an attachment, the TCNS# or project name/number that the review fee is provided for. Upon receipt of the review fee, the Mescalero Apache Tribe will promptly respond to your review request.

The information you provided was also forwarded to the additional Tribes and NHOs listed below. These Tribes and NHOs have NOT set their geographic preferences on TCNS, and therefore they are currently receiving tower notifications for the entire United States. For these Tribes and NHOs, you are required to use reasonable and good faith efforts to determine if the Tribe or NHO may attach religious and cultural significance to historic properties that may be affected by its proposed undertaking. Such efforts may include, but are not limited to, seeking information from the relevant SHPO or THPO, Indian Tribes, state agencies, the U.S. Bureau of Indian Affairs, or, where applicable, any federal agency with land holdings within the state (NPA, Section IV.B). If after such reasonable and good faith efforts, you determine that a Tribe or NHO may attach religious and cultural significance to historic properties in the area and the Tribe or NHO does not respond to TCNS notification within a reasonable time, you should make a reasonable effort to follow up, and must seek guidance from the Commission in the event of continued non-response or in the event of a procedural or substantive disagreement. If you determine that the Tribe or NHO is unlikely to attach religious and cultural significance to historic properties within the area, you do not need to take further action unless the Tribe or NHO indicates an interest in the proposed construction or other evidence of potential interest comes to your attention.

None

The information you provided was also forwarded to the following SHPOs in the State in which you propose to construct and neighboring States. The information was provided to these SHPOs as a courtesy for their information and planning. You need make no effort at this time to follow up with any SHPO that does not respond to this notification. Prior to construction, you must provide the SHPO of the State in which you propose to construct (or the Tribal Historic Preservation Officer, if the project will be located on certain Tribal lands), with a Submission Packet pursuant to Section VII.A of the NPA.

6. SHPO Cathie Matthews - Department of Arkansas Heritage - Little Rock, AR - electronic mail

7. Deputy SHPO Ken Grunewald - Department of Arkansas Heritage - Little Rock, AR - electronic mail

8. SHPO Bob L Blackburn - Oklahoma Historical Society - Oklahoma City, OK - regular mail

9. Historian Linda Henderson - Texas Historical Commission - Austin, TX - electronic mail

If you are proposing to construct a facility in the State of Alaska, you should contact Commission staff for guidance regarding your obligations in the event that Tribes do not respond to this notification within a reasonable time.

Please be advised that the FCC cannot guarantee that the contact(s) listed above opened and reviewed an electronic or regular mail notification. The following information relating to the proposed tower was forwarded to the person(s) listed above:

Notification Received: 01/04/2011
Notification ID: 72273
Tower Owner Individual or Entity Name: Falls County, Texas
Consultant Name: Bruce Hanford

Street Address: 200 Rufe Snow North
Suite 103

City: Keller
State: TEXAS
Zip Code: 76248
Phone: 817-431-1593
Email: bhanford@aarcherinc.com

Structure Type: UTOWER - Unguyed - Free Standing Tower
Latitude: 31 deg 13 min 15.0 sec N
Longitude: 96 deg 47 min 0.4 sec W
Location Description: 191 County Road 2902
City: Reagan
State: TEXAS
County: FALLS
Ground Elevation: 115.5 meters
Support Structure: 54.9 meters above ground level
Overall Structure: 59.4 meters above ground level
Overall Height AMSL: 174.9 meters above mean sea level

If you have any questions or comments regarding this notice, please contact the FCC using the electronic mail form located on the FCC's website at:

<http://wireless.fcc.gov/outreach/notification/contact-fcc.html>.

You may also call the FCC Support Center at (877) 480-3201 (TTY 717-338-2824). Hours are from 8 a.m. to 7:00 p.m. Eastern Time, Monday through Friday (except Federal holidays). To provide quality service and ensure security, all telephone calls are recorded.

Thank you,
Federal Communications Commission

Bruce Hanford

From: towernotifyinfo@fcc.gov
Sent: Tuesday, January 25, 2011 10:12 AM
To: Bruce Hanford
Cc: tcns.fccarchive@fcc.gov; jwaffle@tonkawatribe.com
Subject: Reply to Proposed Tower Structure (Notification ID: 72273) - Email ID #2708965

Dear Bruce Hanford,

Thank you for using the Federal Communications Commission's (FCC) Tower Construction Notification System (TCNS). The purpose of this email is to inform you that an authorized user of the TCNS has replied to a proposed tower construction notification that you had submitted through the TCNS.

The following message has been sent to you from Tribal Administrator Joshua Waffle of the Tonkawa Tribe in reference to Notification ID #72273:

The following site(s) have been reviewed and to date (Tuesday, January 25, 2011) with current resources, the Tonkawa Tribe has no known burial sites of the Tonkawa Indians. If any remains or artifacts are discovered please contact the appropriate Agencies and our Tribal Facilities immediately. If the Tonkawa Tribes databases change in regards to the statement in this letter, a Tribal Representative will contact you.

Respectfully,

Joshua Waffle

Tribal Administrator Tonkawa Tribe

Ph 580 628 2561 124

Fx 580 628 3375

Cl 580 491 1209

jwaffle@tonkawatribe.com

For your convenience, the information you submitted for this notification is detailed below.

Notification Received: 01/04/2011

Notification ID: 72273

Tower Owner Individual or Entity Name: Falls County, Texas

Consultant Name: Bruce Hanford

Street Address: 200 Rufe Snow North

Suite 103

City: Keller

State: TEXAS

Zip Code: 76248

Phone: 817-431-1593

Email: bhanford@aarcherinc.com

Structure Type: UTOWER - Unguyed - Free Standing Tower

Latitude: 31 deg 13 min 15.0 sec N

Longitude: 96 deg 47 min 0.4 sec W

Location Description: 191 County Road 2902

City: Reagan

State: TEXAS

County: FALLS

Ground Elevation: 115.5 meters

Support Structure: 54.9 meters above ground level

Overall Structure: 59.4 meters above ground level

Overall Height AMSL: 174.9 meters above mean sea level

Aarcher, Inc.

March 1, 2011

Ms. Holly Houghten
Historic Preservation Office
Mescalero Apache Tribe
P.O. Box 227
Mescalero, NM 88340

Re: Second Attempt to Determine Interest in a Falls County Communications Site for Impact on Properties of Religious and Cultural Importance to the Mescalero Apache Tribe

Dear Ms. Houghten:

In accordance with the Nationwide Programmatic Agreement for review of effects on Historic Properties for certain undertakings, this letter is a second attempt to respectfully request whether the Mescalero Apache Tribe would like to comment on the planned communications site for its impact on properties of religious and cultural importance to the Tribe. The proposed tower site has never been developed. In the past it was possibly used as crop land.

The proposed site information is as follows:

SITE NAME: Reagan

TCNS NOTIFICATION ID NUMBER: 72273

DATE OF INITIAL NOTIFICATION: 01/04/2011

NEW TOWER or COLLOCATION: New Tower

Structure Type: UTOWER – Unguyed – Free Standing Tower

Latitude: 31 deg 13 min 15.0 sec N

Longitude: 96 deg 47 min 0.4 sec W

Location Description: 191 County Road 2902

City: Reagan County: FALLS State: TEXAS

Ground Elevation: 115.5 meters

Support Structure: 54.9 meters above ground level

Overall Structure: 59.4 meters above ground level

Overall Height AMSL: 174.9 meters above mean sea level

We have enclosed a self-addressed envelope for your convenience in case you would like to communicate by regular mail. Alternatively, if you prefer, you may contact us by telephone at 443-243-3383, fax at 817-431-6554 or electronic mail at EHeinemann@aarcherinc.com.

We look forward to hearing from you even if you should decide that this proposed site is of no interest to the Mescalero Apache Tribe.

Sincerely,

Erin Heinemann
Project Manager

Aarcher, Inc.

March 1, 2011

Kelly Glancy
Comanche Nation Office of Historic Preservation
P.O. Box 908
Lawton, OK 73502

Re: Second Attempt to Determine Interest in a Falls County Communications Site for Impact on Properties of Religious and Cultural Importance to the Comanche Nation

Dear Ms. Kelly Glancy:

In accordance with the Nationwide Programmatic Agreement for review of effects on Historic Properties for certain undertakings, this letter is a second attempt to respectfully request whether the Comanche Nation would like to comment on the planned communications site for its impact on properties of religious and cultural importance to the Nation. The proposed tower site has never been developed. In the past it was possibly used as crop land.

The proposed site information is as follows:

SITE NAME: Reagan
TCNS NOTIFICATION ID NUMBER: 72273
DATE OF INITIAL NOTIFICATION: 01/04/2011
NEW TOWER or COLLOCATION: New Tower
Structure Type: UTOWER – Unguyed – Free Standing Tower
Latitude: 31 deg 13 min 15.0 sec N
Longitude: 96 deg 47 min 0.4 sec W
Location Description: 191 County Road 2902
City: Reagan County: FALLS State: TEXAS
Ground Elevation: 115.5 meters
Support Structure: 54.9 meters above ground level
Overall Structure: 59.4 meters above ground level
Overall Height AMSL: 174.9 meters above mean sea level

We have enclosed a self-addressed envelope for your convenience in case you would like to communicate by regular mail. Alternatively, if you prefer, you may contact us by telephone at 443-243-3383, fax at 817-431-6554 or electronic mail at EHeinemann@aarcherinc.com.

We look forward to hearing from you even if you should decide that this proposed site is of no interest to the Comanche Nation.

Sincerely,

Erin Heinemann
Project Manager

Aarcher, Inc.

March 1, 2011

Mr. Neil B. Cloud - NAGPRA Coordinator
Southern Ute Tribe
P.O. Box 737
Mail Stop # 73
116 Capote Drive
Ignacio, Co 81137

Re: Second Attempt to Determine Interest in a Falls County Communications Site for Impact on Properties of Religious and Cultural Importance to the Southern Ute Tribe

Dear Mr. Cloud:

In accordance with the Nationwide Programmatic Agreement for review of effects on Historic Properties for certain undertakings, this letter is a second attempt to respectfully request whether the Southern Ute Tribe would like to comment on the planned communications site for its impact on properties of religious and cultural importance to the Tribe. The proposed tower site has never been developed. In the past it was possibly used as crop land.

The proposed site information is as follows:

SITE NAME: Reagan

TCNS NOTIFICATION ID NUMBER: 72273

DATE OF INITIAL NOTIFICATION: 01/04/2011

NEW TOWER or COLLOCATION: New Tower

Structure Type: UTOWER – Unguyed – Free Standing Tower

Latitude: 31 deg 13 min 15.0 sec N

Longitude: 96 deg 47 min 0.4 sec W

Location Description: 191 County Road 2902

City: Reagan County: FALLS State: TEXAS

Ground Elevation: 115.5 meters

Support Structure: 54.9 meters above ground level

Overall Structure: 59.4 meters above ground level

Overall Height AMSL: 174.9 meters above mean sea level

We have enclosed a self-addressed envelope for your convenience in case you would like to communicate by regular mail. Alternatively, if you prefer, you may contact us by telephone at 443-243-3383, fax at 817-431-6554 or electronic mail at EHeinemann@aarcherinc.com.

We look forward to hearing from you even if you should decide that this proposed site is of no interest to the Southern Ute Tribe.

Sincerely,

Erin Heinemann
Project Manager

Bruce Hanford

From: towernotifyinfo@fcc.gov
Sent: Tuesday, March 15, 2011 6:18 PM
To: Bruce Hanford
Cc: tcns.fccarchive@fcc.gov; holly@mescaleroapache.org
Subject: Reply to Proposed Tower Structure (Notification ID: 72273) - Email ID #2756012

Dear Bruce Hanford,

Thank you for using the Federal Communications Commission's (FCC) Tower Construction Notification System (TCNS). The purpose of this email is to inform you that an authorized user of the TCNS has replied to a proposed tower construction notification that you had submitted through the TCNS.

The following message has been sent to you from Tribal Historic Preservation Officer Holly B Houghten of the Mescalero Apache Tribe in reference to Notification ID #72273:

After review of this communications project, it has been determined that the Mescalero Apache Tribe has no immediate concerns within the project area, and that the project will cause no adverse effects to cultural resources or areas of interest to the Mescalero Apache Tribe. If, however, the Applicant discovers archeological remains or resources during construction, the Applicant should stop construction and notify the appropriate Federal Agency and Tribe(s).

For your convenience, the information you submitted for this notification is detailed below.

Notification Received: 01/04/2011
Notification ID: 72273
Tower Owner Individual or Entity Name: Falls County, Texas
Consultant Name: Bruce Hanford
Street Address: 200 Rufe Snow North
Suite 103
City: Keller
State: TEXAS
Zip Code: 76248
Phone: 817-431-1593
Email: bhanford@aarcherinc.com

Structure Type: UTOWER - Unguyed - Free Standing Tower
Latitude: 31 deg 13 min 15.0 sec N
Longitude: 96 deg 47 min 0.4 sec W
Location Description: 191 County Road 2902
City: Reagan
State: TEXAS
County: FALLS
Ground Elevation: 115.5 meters
Support Structure: 54.9 meters above ground level
Overall Structure: 59.4 meters above ground level
Overall Height AMSL: 174.9 meters above mean sea level

Comanche Nation Historic Preservation Office



March 30, 2011

Erin Heinemann, Project Manager
Archer, Inc.
200 Rufe Snow North, Suite 103
Keller, TX 76248

**RE: Second Attempt to Determine Interest in a Falls County Communications Site for
Impact on Properties of Religious and Cultural Importance to the Comanche Nation
Site Name: Reagan TCNS # 72273**

Dear Ms. Heinemann:

In response to your request, the above referenced project has been reviewed by staff of this office to identify areas that may potentially contain prehistoric or historic archeological materials. The location of your project has been cross referenced with the Comanche Nation site files, where an indication of *no current listing* has been identified. Therefore, based on the topographic/hydrologic settings of your and level of work proposed, archeological materials *are* not likely to be encountered.

If you require additional information or are in need of further assistance, please contact this office at (580) 595-9960 or 9618.

This review is performed in order to locate, record, and preserve the Comanche Nation and State's prehistoric and historic cultural heritage, in cooperation with the State Historic Preservation Office.

Sincerely,


Kelly Glancy, Comanche Nation HPO

TCNS Certification

Site Name: Reagan TCNS #: 72273

All notified Tribes either responded that no issues existed with the proposed action or communication was referred to the FCC through the TCNS system and the appropriate waiting time has expired.

This also certifies that should I receive in the future any Tribal request regarding this site, I will notify you immediately.

Date: 04/15/2011 Consultant Name/Address: 

Bruce Hanford
Archer, Inc.
200 Rufe Snow North, Suite 103
Keller, TX 76248

Exhibit 11



Federal Aviation Administration
 Air Traffic Airspace Branch, ASW-520
 2601 Meacham Blvd.
 Fort Worth, TX 76137-0520

Aeronautical Study No.
 2010-ASW-6658-OE

Issued Date: 12/09/2010

Harold Ferguson
 HOTCOG
 1514 S. New Road
 Waco, TX 76711

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure: Antenna Tower Reagan
 Location: Reagan, TX
 Latitude: 31-13-15.05N NAD 83
 Longitude: 96-47-00.46W
 Heights: 195 feet above ground level (AGL)
 574 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or:

- At least 10 days prior to start of construction (7460-2, Part I)
- Within 5 days after the construction reaches its greatest height (7460-2, Part II)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking and/or lighting are accomplished on a voluntary basis, we recommend it be installed and maintained in accordance with FAA Advisory circular 70/7460-1 K Change 2.

This determination expires on 06/09/2012 unless:

- (a) extended, revised or terminated by the issuing office.
- (b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO

SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates , heights, frequency(ies) and power . Any changes in coordinates , heights, and frequencies or use of greater power will void this determination. Any future construction or alteration , including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Communications Commission (FCC) because the structure is subject to their licensing authority.

If we can be of further assistance, please contact our office at (817) 838-1994. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2010-ASW-6658-OE.

Signature Control No: 133741971-134225513

(DNE)

Linda Steele
Technician

Attachment(s)
Frequency Data

cc: FCC

Frequency Data for ASN 2010-ASW-6658-OE

LOW FREQUENCY	HIGH FREQUENCY	FREQUENCY UNIT	ERP	ERP UNIT
150	174	MHz	500	W
450	512	MHz	500	W

Exhibit 12

Site: Reagan

FCC NEPA Significant Effect Checklist 47 CFR § 1.1307 (a) 1-8			
		<i>Yes</i>	<i>No</i>
1.	Officially designated wilderness area Do map sources indicate the proposed action will be sited within a wilderness area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.	Officially designated wildlife preserve Do map sources indicate the proposed action will be sited within a wildlife preserve?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.	(i) Listed threatened or endangered species or designated critical habitat Was evidence discovered that the proposed action would have a significant effect on listed threatened or endangered species or designated critical habitat?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	(ii) Proposed endangered or threatened species or likely to result in the destruction or adverse modification of critical habitats Was evidence discovered that the proposed action would have a significant effect on proposed endangered or threatened species or is likely to effect critical habitats?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.	Archaeological/Cultural Resources (districts, sites, buildings, structures or objects, significant in American history, architecture, archeology, engineering or culture, that are listed, or eligible for listing, in the National Register of Historic Places) Was evidence discovered the proposed action could have a significant effect on Archaeological/Cultural Resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.	Indian Religious Site Was evidence discovered that the proposed action would be sited on an Indian Religious Site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.	100-Year Floodplain Is performance of an Environmental Assessment required because the subject property is within a 100-year floodplain and the proposed action is other than a co-location?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7.	Construction will involve significant change in surface features (e.g., wetland fill, deforestation or water diversion) Was evidence discovered that the proposed action would have a significant effect on surface features?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8.	Radiofrequency radiation Will the proposed action result in radiofrequency radiation in excess of the applicable health and safety guidelines?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9.	Antenna towers and/or supporting structures to be equipped with high intensity white lights which are to be located in a residential neighborhood Was evidence discovered that the proposed action would have a significant effect on residential neighborhoods?	<input type="checkbox"/>	<input checked="" type="checkbox"/>